

ANNUAL MANAGEMENT REPORT FOR THE
SHELLFISH FISHERIES OF THE WESTWARD REGION, 2001

By

Westward Region Shellfish Management Staff

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TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	i
LIST OF FIGURES	ix
ABSTRACT	1
OVERVIEW	2
KODIAK AREA.....	14
Introduction.....	15
Tanner Crab	16
Dungeness Crab	21
King Crab	23
Shrimp	27
Sea Cucumber.....	29
Sea Urchins	31
Octopus.....	33
Razor Clams.....	34
ALASKA PENINSULA AREA.....	66
Introduction	67
King Crab	67
Tanner Crab	69
Dungeness Crab	73
Shrimp	74
Sea Cucumbers	75
Octopus.....	77
ALEUTIANS AREA.....	94
Aleutian Islands King Crab.....	95
Eastern Aleutian Tanner Crab.....	106
Western Aleutian Tanner Crab.....	111
Aleutian Dungeness Crab.....	113
Aleutian Shrimp	114
Aleutian Miscellaneous Shellfish.....	115
BERING SEA AREA	156
King Crab Registration Area T Bristol Bay.....	157
King Crab Registration Area Q Bering Sea.....	165
Pribilof District	166

TABLE OF CONTENTS (Cont.)

	<u>Page</u>
St. Matthew Island District.....	167
Tanner Crab	173
Miscellaneous Shellfish.....	183
CDQ Crab Fisheries	190
Bering Sea King and Tanner Crab Buoy Identification Program.....	195
 WEATHERVANE SCALLOP	 272
Introduction	273
Management History.....	273
Current Management.....	274
Kodiak Registration Area.....	275
Alaska Peninsula Registration Area.....	278
Bering Sea Registration Area	278
Dutch Harbor Registration Area.....	279
Adak Registration Area.....	280
 MANDATORY SHELLFISH OBSERVER PROGRAM.....	 301
Abstract.....	302
Introduction	303
History of Observe Programs	303
Shellfish Observer Program Guidelines.....	305
Observer Duties.....	307
Program Review.....	308
2001 Observer Deployments By Fishery.....	311

LIST OF TABLES

<u>Table</u>	<u>Page</u>
1-1. Westward Region king crab, shrimp, Tanner crab, snow crab, and Dungeness crab economic profiles, 1950-2001	4
1-2. Shellfish processors operating in the Westward Region during the 2001 fishing seasons.....	7
1-3. Westward Region domestic trawl shrimp catch, 1960-2001	8
1-4. Westward Region king crab (red, blue, golden) catch in thousands of pounds by registration area and by year for 1950-1959 and registration year (June 28-June 27) for 1960/61 – 2001/02	9
1-5. Westward Region Tanner and snow crab catch (in pounds), 1965-2001	11
1-6. Westward Region Dungeness crab catch (in pounds) by district, 1962-2001.....	12

Kodiak Tables

2-1. Landings and values of shellfish fisheries to the Port of Kodiak, 2001.....	36
2-2. Shellfish emergency orders issued for the Kodiak Management Area, 2001.....	37
2-3. Commercial catch and effort for the Tanner crab <i>Chionoecetes bairdi</i> fishery for the Kodiak Management District, 1967-2001	38
2-4. Tanner crab <i>Chionoecetes bairdi</i> catch in pounds by fishing section for the Kodiak Management District, 1991/92-2000/01.....	39
2-5. ADF&G Kodiak Area Tanner crab population estimates and GHL determination for the 2000/01 fishery	40
2-6. Dungeness crab <i>Cancer magister</i> commercial catch and effort by fishing year for the Kodiak Management District, 1962-2001	41
2-7. Keel length frequencies of vessels landing Dungeness crab during the 2001 Kodiak District fishing season.....	43
2-8. Dungeness crab commercial harvest (in pounds) by fishing section, Kodiak Management District, 1992-2001.....	44
2-9. Historic commercial red king crab catch and effort for the Kodiak Registration Area “K”, 1960-2001.....	45

LIST OF TABLES (Cont.)

<u>Table</u>	<u>Page</u>
2-10. Kodiak red king crab harvest composition and seasons, 1960-2001.....	46
2-11. Historic commercial golden king crab <i>Lithodes aequispinus</i> catch and effort for the Kodiak Registration Area “K”, 1983-2001	47
2-12. Historic commercial trawl shrimp catch and effort for the Kodiak District of Westward Registration Area “J”, 1958-2001	48
2-13. ADF&G shrimp population survey estimates for selected sections of the Kodiak and Chignik Districts, 1995, 1998, and 2001	50
2-14. Commercial pot shrimp catch statistics, Kodiak District of Statistical Area “J”, 1969-2001	51
2-15. Commercial harvest statistics of red sea cucumbers in the Kodiak and Chignik Districts, 1991-2001	52
2-16. Red sea cucumber commercial harvest by area, Kodiak and Chignik Districts, 2001	52
2-17. Historic harvest of green sea urchins in the Kodiak District, 1980-2001	53
2-18. Commercial catch, effort, and value for octopus in the Kodiak Management Area including both state and federal waters, 1977-1984.....	54
2-19. Commercial catch, effort, and value for octopus in the Kodiak Management Area from state and federal waters, 1985-2001	55
2-20. Razor clam commercial catch, effort and value in the Kodiak Management Area, 1960-2001.....	56
 Peninsula Tables	
3-1. Landings and values of shellfish fisheries in the South Peninsula Area, 2001.....	78
3-2. Shellfish emergency orders issued for the Alaska Peninsula Management Area, 2001	79
3-3. Catch and effort statistics for red king crab in the Alaska Peninsula Area M, 1947-2001.....	80

LIST OF TABLES (Cont.)

<u>Table</u>	<u>Page</u>
3-4. Chignik District Tanner crab <i>Chionoecetes bairdi</i> catch and effort statistics, 1968-2001.....	81
3-5. Chignik and South Peninsula Area Tanner crab population, 2001	82
3-6. Tanner crab <i>Chionoecetes bairdi</i> catch and effort statistics for South Peninsula District, 1967-2001.....	83
3-7. Commercial catch and effort for deepwater Tanner crabs, <i>Chionoecetes tanneri</i> and <i>angulatus</i> , Alaska Peninsula District, 1994-2001.....	84
3-8. Dungeness crab <i>Cancer magister</i> harvest statistics, Alaska Peninsula District, 1968-2001	85
3-9. South Peninsula and Chignik District shrimp harvest statistics, 1968-2001.....	86
3-10. Harvest statistics of octopus in the state and federal waters of the Alaska Peninsula District, 1980-2001.....	87

Aleutian Islands Tables

4-1. Aleutian Islands, Area O, red king crab commercial fishery data, 1960/61-2001/2002.....	118
4-2. Aleutian Islands, Area O, red king crab fishery economic performance data, 1973/74-2001/02.....	124
4-3. Eastern Aleutian Islands subsistence king and Tanner crab harvest, 1999-2001	125
4-4. Aleutian Islands golden king crab commercial fishery data, 1981/82-2000/2001 seasons.....	126
4-5. Aleutian Islands golden king crab fishery economic performance data, 1981/82-2000/2001 seasons	129
4-6. Aleutian Islands golden king crab catch by statistical area, 2000/2001 season.....	131
4-7. Aleutian Islands golden king crab fishery data, 2001/2002 season.....	133
4-8. Aleutian Islands scarlet king crab fishery data, 1992-2001	134

LIST OF TABLES (Cont.)

<u>Table</u>	<u>Page</u>
4-9. Eastern Aleutian District Tanner crab fishery data, 1973/74-2001	135
4-10. Eastern Aleutian District Tanner crab fishery economic performance data, 1973/74-2001.....	136
4-11. Eastern Aleutian District grooved Tanner crab fishery data, 1993-2001	137
4-12. Eastern Aleutian District triangle Tanner crab fishery data, 1993-2001	138
4-13. Western Aleutian District Tanner crab fishery data, 1973/74-2001/02	139
4-14. Western Aleutian District commercial Tanner crab fishery economic data 1973/74-2001/02.....	140
4-15. Western Aleutian District grooved Tanner crab fishery data, 1992-2001	141
4-16. Aleutian District Dungeness crab fishery data, 1974-2001	142
4-17. Aleutian Islands District trawl shrimp fishery data, 1972-2001	143
4-18. Aleutian Islands miscellaneous shellfish fishery data, 1996-2001	144

Bering Sea Tables

5-1. Bristol Bay commercial red king crab harvest data, 1966-2001	199
5-2. Bristol Bay commercial red king crab economic performance, 1980-2001.....	201
5-3. Bristol Bay commercial red king crab catch and effort projections for non-AFA vessels, based on 12-hour telex reports.....	202
5-4. Bristol Bay commercial red king crab catch and effort projections for AFA vessels, based on vessel reports.....	203
5-5. Bristol Bay commercial red king crab catch by statistical area, 2001	204
5-6. Bristol Bay commercial red king crab harvest composition by fishing season, 1973-2001.....	205
5-7. Bristol Bay red king crab cost-recovery harvest data, 1990-2001	206
5-8. Bristol Bay red king crab cost recovery economic performance data, 1990-2001	207

LIST OF TABLES (Cont.)

<u>Table</u>	<u>Page</u>
5-9. Pribilof District commercial red and blue king crab catch statistics, 1973/74-2001	208
5-10. Guideline harvest level (GHL), economic performance and season length summary of the commercial red and blue king crab fishery, in the Pribilof District, 1980/81-2001	210
5-11. Commercial harvest of blue king crabs in the St. Matthew Island Section, 1977-2001	211
5-12. Guideline harvest level (GHL), economic performance and season length summary of the commercial blue king crab fishery in the St. Matthew Island Section, 1983-2001.....	212
5-13. Guideline harvest level (GHL), inseason harvest projections and actual commercial harvests for the St. Matthew Island Section blue king crab fishery, 1983-2001	213
5-14. Commercial harvest of blue king crabs by season for the St. Matthew Island Section, 1977-2001.....	214
5-15. Pribilof District golden king crab fishery data, 1981/82-2001 seasons	215
5-16. Pribilof District golden king crab fishery economic performance data, 1991-2001 seasons	216
5-17. Pribilof District golden king crab catch by statistical area, 2001.....	217
5-18. Saint Matthew Island Section golden king crab fishery data, 1982/83-2001 seasons.....	218
5-19. Saint Matthew Island Section golden king crab fishery economic performance data, 1991-2001 seasons	219
5-20. Registration Area Q scarlet king crab fishery data, 1992-2001.....	220
5-21. Commercial harvest statistics, by season, for the Bering Sea District Tanner crab fishery, 1969-2001	221
5-22. Bering Sea District Tanner crab commercial catch by subdistrict, 1974/75-2001.....	223
5-23. Economic performance of the Bering Sea District Tanner crab commercial fishery, 1979/80-2001	226

LIST OF TABLES (Cont.)

<u>Table</u>	<u>Page</u>
5-24. Bering Sea District commercial Tanner crab harvest composition by fishing season, 1970-2001.....	227
5-25. Bering Sea District commercial snow crab catch data, 1978/79-2001 seasons.....	228
5-26. Bering Sea District snow crab season dates and area closures, 1977/78-2001 seasons.....	229
5-27. 2001 Bering Sea snow crab fishery inseason harvest and effort projections.....	231
5-28. Bering Sea District commercial snow crab harvest by season and subdistrict, 1977/78-2001 seasons.....	232
5-29. Bering Sea District commercial snow crab catch by statistical area, 2001.....	236
5-30. Bering Sea District commercial snow crab harvest composition by fishing season, 1978/79-2001 seasons.....	238
5-31. Economic performance of the Bering Sea District commercial snow crab fishery, 1979/80-2001 seasons	239
5-32. Bering Sea District grooved Tanner crab fishery data, 1992-2001.....	240
5-33. Bering Sea District triangle Tanner crab fishery data, 1992-2001	241
5-34. Bering Sea hair crab fishery data, 1978-2001	242
5-35. Bering Sea hair crab fishery economic performance data, 1978/79-2001	244
5-36. Bering Sea octopus incidental harvest by season, 1995-2001	245
5-37. Bering Sea snail catch statistics by season, 1992-2001	246
5-38. Bering Sea snail economic performance, 1992-2001	247
5-39. North Peninsula District Dungeness crab fishery statistics, 1992-2001	248
5-40. The Community Development Quota (CDQ) Program percent allocation by crab fishery group.....	249
5-41. The crab Community Development Quota (CDQ) Program fisheries statistics	250
5-42. The crab Community Development Quota (CDQ) Program economic overview.....	251

LIST OF TABLES (Cont.)

<u>Table</u>	<u>Page</u>
5-43. Pot limits for Bering Sea king and Tanner crab fisheries, 2001-2002.....	252
5-44. Number of Bering Sea buoy tags printed and issued by fishery, 2001-2002.....	253
 Weathervane Scallop Tables	
6-1. Historic statewide commercial weathervane scallop catch, number of vessels, and number of landings, excluding Cook Inlet, 1967-2001	282
6-2. Historic commercial catch, effort, and value of weathervane scallops, Kodiak Registration Area, 1967 through 2001/02	283
6-3. Commercial harvest, average shell height from retained catch, and catch per unit effort from scallop observer data, Westward Region, 1993/94 through-2001/02.....	284
6-4. Historic commercial catch, effort and value of weathervane scallops, Alaska Peninsula Registration Area, 1975 through 2001/02	285
6-5. Historic commercial catch, effort and value of weathervane scallops, Bering Sea Registration Area, 1987 through 2001/02	286
6-6. Historic commercial catch, effort and value of weathervane scallops, Dutch Harbor Registration Area, 1982 through 2001/02.....	287
 Onboard Observer Program	
7-1. Mandatory shellfish observer program cost recovery harvest statistics.....	321
7-2. Economic performance for the mandatory shellfish observer program cost recovery harvest.....	321
7-3. Observer coverage levels for the Bering Sea and Aleutian Islands crab fisheries implemented by the Crab Observer Oversight Task Force for 2001/2002.....	322
7-4. Number of observer sessions (briefings, midtrip debriefings and final debriefings) from 1991-2001	323
7-5. Number of observer sessions for each month of calendar year 2001 and 10-year average for 1991-2000.....	324

LIST OF TABLES (Cont.)

<u>Table</u>	<u>Page</u>
7-6. Summary of observer activity in the shellfish observer program, from inception (first briefing September 20, 1988) through December 31, 2001.....	324
7-7. Number of observer sessions per fishery for calendar year 2001	325
7-8. Percentage of pots sampled by observers on vessels by fishery for calendar year 2001	326
7-9. Summary of observed vessels, observer trips, percentage of total observer trips, observer-months at sea, and percentage of total observer-months at sea by fishery for the year 2001.....	327
7-10. Summary of evidence collected by shellfish observers, 1991-2001.....	328
7-11. Yearly summary by region of observed scallop vessels, number of observer trips, and observer-months at sea for Alaska weathervane scallop fisheries, 1993-2001	332
7-12. Statewide scallop observer activity, 1993-2001	333
7-13. Scallop observer activity by area for the calendar year 2001	333
7-14. Crab observer training and participation since 1988.....	334
7-15. Scallop observer training and participation since 1991	335

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
1-1. Alaska Department of Fish and Game Westward Region for shellfish management	13
Kodiak Figures	
2-1. ADF&G statistical areas for shellfish fishery management in the Kodiak Island area	57
2-2. The Kodiak District Tanner crab and sea cucumber fishing sections, 2001.....	58
2-3. Number of Tanner crabs per kilometer towed in the 2001 Kodiak trawl survey.....	59
2-4. Kodiak District commercial Dungeness crab fishing seasons	60
2-5. Kodiak District commercial Dungeness crab width frequencies and shell conditions, 1998-2001.....	61
2-6. Kodiak District commercial Dungeness harvest and vessels participating by month, 2001.....	62
2-7. Number of red king crabs per kilometer towed in the 2001 Kodiak trawl survey.....	63
2-8. Kodiak District trawl shrimp fishing sections and areas closed to non-pelagic trawling.....	64
2-9. Kodiak Section sea cucumber harvests and guideline harvest levels (GHLs), 1998-2001.....	65
Peninsula Figures	
3-1. Unimak Bight, Central, and Chignik Districts of king crab Registration Area M.....	88
3-2. Survey stations towed and number of red king crabs per kilometer towed during the 2001 Alaska Peninsula trawl survey.....	89
3-3. Chignik and South Peninsula Districts of Tanner crab Registration Area J	90
3-4. Survey stations towed and the number of Tanner crabs per kilometer towed from the 2001 Alaska Peninsula trawl survey.....	91

LIST OF FIGURES (Cont.)

<u>Figure</u>	<u>Page</u>
3-5. Alaska Peninsula and Chignik Districts of Dungeness crab Registration Area J.....	92
3-6. Chignik and South Peninsula Districts of shrimp Registration Area J	93
Aleutian Islands Tables	
4-1. Aleutian Islands, Area O, king crab management area.....	145
4-2. Adak (Area R) and Dutch Harbor (Area O) king crab Registration Areas 1981/82-1996/97	146
4-3. Aleutian Islands red king crab fishery harvest and effort, 1960-2001	147
4-4. Adak Area golden king crab fishery harvest, fishery performance and average weight data, 1981/82-1995/96 seasons	148
4-5. Dutch Harbor area golden king crab fishery harvest, fishery performance and average weight data, 1981/82-1995/96 seasons	149
4-6. Aleutian Islands golden king crab fishery vessel registrations and number of pots per vessel 1981/82-2000/01	150
4-7. Aleutian Islands golden king crab fishery harvest, catch per unit of effort and average weight data by degree of longitude, 2000/2001	151
4-8. Eastern and Western Aleutian Districts of Tanner crab Registration Area J	152
4-9. Aleutian Dungeness crab management district.....	153
4-10. Aleutian shrimp management district	154
4-11. Aleutian Islands miscellaneous shellfish management district.....	155
Bering Sea Figures	
5-1. King crab Registration Area T (Bristol Bay)	254
5-2. Historic Bristol Bay red king crab harvest and guideline harvest levels, 1966-2001	255
5-3. Economic performance of the Bristol Bay red king crab fishery in terms of vessel effort and total fishery value, 1980-2001.....	256

LIST OF FIGURES (Cont.)

<u>Figure</u>	<u>Page</u>
5-4. King crab Registration Area Q (Bering Sea)	257
5-5. Historic red and blue king crab harvest in pounds and guideline harvest level for the Pribilof District, 1973-2001	258
5-6. Number of vessels, season length, and total fishery value of the Pribilof District king crab fishery, 1980-2001	259
5-7. Historic blue king crab harvest and guideline harvest level for the St. Matthew Island Section, 1977-2001	260
5-8. Total effort, season length (days) and total fishery value of the St. Matthew Island king crab fishery, 1981-2001	261
5-9. Bering Sea District of Tanner crab Registration Area J showing subdistricts and sections.....	262
5-10. Bering Sea Tanner crab harvest and guideline harvest levels, 1979-2001	263
5-11. Harvest and guideline harvest level for the Bering Sea snow crab fishery, 1977-2001	264
5-12. The Bering Sea portion of miscellaneous shellfish Registration Area J.....	265
5-13. Bering Sea hair crab registration area	266
5-14. Bering Sea hair crab fishery harvest and effort, 1978-2001	267
5-15. Number of vessels and harvest in the Bering Sea snail fishery, 1992-2001.....	268
5-16. The North Peninsula District of Shrimp Registration Area J.....	269
5-17. North Peninsula District of Dungeness Crab Registration Area J	270
5-18. Fisheries of the Bering Sea crab Community Development Quota Program managed by the Dutch Harbor staff.....	271

Weathervane Scallop Figures

6-1. Major weathervane scallop fishing locations in coastal waters of Alaska.....	288
6-2. State of Alaska weathervane scallop fishing registration areas	289
6-3. Kodiak weathervane scallop fishing registration area and closed waters	290

LIST OF FIGURES (Cont.)

<u>Figure</u>	<u>Page</u>
6-4. Estimated shell height distribution of scallops caught in the Northeast District, Kodiak Registration Area, 1996 through 2001	291
6-5. Weathervane scallop harvest by round weight, shucked meat weight, dredge hours, and CPUE, Northeast District, Kodiak Registration Area, 1993 through 2001	292
6-6. Estimated shell height distribution of scallops caught in the Shelikof District, Kodiak Registration Area, 1996 through 2001	293
6-7. Weathervane scallop harvest by round weight, shucked meat weight, dredge hours, and CPUE, Shelikof District, Kodiak Registration Area, 1993 through 2001	294
6-8. Alaska Peninsula weathervane scallop fishing registration area and closed waters.....	295
6-9. Bering Sea weathervane scallop fishing registration area and closed waters	296
6-10. Estimated shell height distribution of scallops caught in the Bering Sea Registration Area, 1996 through 2001	297
6-11. Weathervane scallop harvest by round weight, shucked meat weight, dredge hours, and CPUE, Bering Sea Registration Area, 1993 through 2001.....	298
6-12. Dutch Harbor weathervane scallop fishing registration area and closed waters	299
6-13. Adak weathervane scallop fishery registration area and closed waters.....	300

Onboard Observer Program

7-1. Comparison of total number of crab and scallop observer sessions (briefings, midtrips and debriefings) for the years 1999, 2000, 2001 and the average for the previous ten years, from 1989-1998.....	336
7-2. Total number of crab and scallop observer sessions (briefings, midtrip debriefings and final debriefings) for 2001.....	337
7-3. Number of observer sessions (briefings, midtrip debriefings and final debriefings) per fishery for 2001.....	338
7-4. Level of observer coverage per fishery in calendar year 2001	339

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KODIAK AREA

Introduction

The Kodiak Shellfish Management Area includes the Pacific Ocean waters of the Exclusive Economic Zone (EEZ) and territorial waters south of the latitude of Cape Douglas (58°51.1' N lat.) on the Alaska Peninsula, east of the longitude of Cape Kumlik (157°27' W long.), and west of 148°50' W long. The management area varies slightly for Dungeness crab and shrimp, where it extends from the latitude of Cape Douglas to the longitude of Kilokak Rocks on the Alaska Peninsula (156°19' W long.). This report reviews the 2001 commercial shellfish fisheries and provides summaries of the history involving each.

Tanner crab *Chionoecetes bairdi*, Weathervane scallop *Patinoplectin caurinus*, Dungeness crab *Cancer magister*, giant Pacific octopus *Octopus dofleini*, and red sea cucumber *Parastichopus californicus* were the principal commercial shellfish species harvested from the Kodiak Area in 2001. A small harvest of green sea urchins *Strongylocentrotus droebachiensis* and trawl-caught shrimp *Pandalus* sp. also occurred. The single most valuable shellfish species harvested from the Kodiak Area were Tanner crabs worth \$1.2 million to the fleet. Bering Sea harvests of snow crabs *Chionoecetes opilio* worth \$2.1 million and king crabs worth \$1.8 million were landed at the Port of Kodiak. Approximately 3.4 million pounds of shellfish were landed at the Port of Kodiak during 2001, with an exvessel value of \$ 6.8 million (Table 2-1).

Historically, the Kodiak Area has supported substantial commercial red king crab *Paralithodes camtschaticus* and pink shrimp *Pandalus borealis* fisheries. Currently, red king crab populations occur at very low levels in isolated areas. No commercial harvest has been allowed since 1982. Current shrimp populations also remain below long-term historic averages in most of the Kodiak Area. Localized areas showed increases in shrimp densities during a survey conducted in 2001; however, most commercial trawl shrimp fisheries remain closed. An offshore area, the General Section, remains open to exploratory shrimp trawling. Shrimp fishing with pot gear occurs, however commercial landings are infrequent as most of the catch is retained for personal use.

Two sections of the Kodiak District opened for a limited commercial Tanner crab *Chionoecetes bairdi* fishery in 2001. This was the first commercial fishery for Tanner crab in the Kodiak District since 1994. The 2001 fishery was the first prosecuted under the harvest strategy adopted by the Alaska Board of Fisheries (BOF) in 1999.

A discussion of each fishery that was active during 2001 is provided except for the Kodiak Area weathervane scallop fishery, which is summarized in the statewide weathervane scallop section of this report. The Chignik sea cucumber fishery information is contained within this Kodiak report. Fishery harvests are reported by landings from individual statistical areas. Figure 2-1 shows the statistical areas for the Kodiak Area. Eight emergency orders were issued during 2001 for shellfish fisheries in the Kodiak Area (Table 2-2).

TANNER CRAB

Introduction

The Kodiak District for Tanner crab *Chionoecetes bairdi* are the waters of Registration Area J south of the latitude of Cape Douglas (58°5.11' N lat.), west of the longitude of Cape Fairfield (148°50.25' W long.) and east of the longitude of Cape Kumlik (157°27' W long.). The district is further subdivided into eight sections (Figure 2-2).

Historic Background

The domestic Tanner crab fishery for Kodiak and waters south of the Alaska Peninsula began in 1967 when approximately 100,000 pounds were landed. As king crab stocks declined in the late 1960s, interest increased in the development of a Tanner crab fishery. Fishermen developed the use of wooden slats in the tunnel eye of the pot to reduce the height of the opening to 4 inches or less. This height did not allow the larger king crab to enter the pot.

Considering the abundance of Tanner crab and availability of fishing gear, the commercial fishery was slow to develop. Four factors contributed to this slow development:

1. Relatively low consumer acceptance of Tanner crab;
2. Competition on the U.S. market from imported Tanner crabmeat;
3. A black encrustment on crab shell now known as black mat syndrome;
4. Uneconomical extraction of meat from the shell. Extraction of meat from Tanner crab legs using equipment and methods designed for the larger king crab required a high amount of labor per yield. Shell fragments in shoulder meat required considerable hand labor for removal.

By the 1972/73 season, market conditions had improved and Tanner crab had established itself as a dominant winter and spring fishery in the Kodiak Area. In 1973, the Alaska Department of Fish and Game (ADF&G) initiated an experimental survey program that used king crab pots as the means of capture. The primary goals of these surveys were to estimate the annual relative abundance of crabs and to predict recruitment trends two to four years in advance of crabs attaining commercial harvest size. These estimates allowed ADF&G to establish annual harvest levels.

As a result of the newly initiated Tanner crab survey programs, in 1974 and 1975, the BOF set a guideline harvest range on Tanner crab of 35 to 55 million pounds for the Kodiak, Chignik, and South Peninsula Areas combined. In addition, in 1975, the BOF adopted an April 30 season closure to protect crab at the onset of the mating season. In 1976, the BOF established a 5½-inch carapace width (CW) minimum size limit, which allows mature males at least one full breeding season before becoming available for commercial harvest. Beginning December 1978, the federal government assumed joint Tanner crab management responsibilities with the State of Alaska in the Exclusive Economic Zone (EEZ) from 3 to 200 nautical miles offshore in Alaskan waters. This joint

management was accomplished through a Fishery Management Plan (FMP) promulgated by the North Pacific Fishery Management Council (NPFMC).

The commercial fishery peaked during the 1977/78 season when over 33 million pounds were harvested from the Kodiak District (Table 2-3). The commercial catch began to decline in the late 1970s and early 1980s. In 1980, the BOF adopted into regulation a 250 pot limit for the Kodiak District fishery, which was aimed at reducing effort and improving manageability of the fishery.

During this period, it became evident to ADF&G that the pot surveys did not adequately assess the Tanner crab stocks, since survey results did not accurately predict fishery performance. Small Tanner crabs, $\leq 114\text{mm}$ CW, did not appear to enter pots in predictable numbers from survey to survey; thus, little could be determined regarding recruitment trends. Trawl gear was in use by the National Marine Fisheries Service (NMFS) to assess Bering Sea crab populations. ADF&G began an experimental program to test the possibility of using trawls in the Gulf of Alaska in 1980. This trawl survey was done in conjunction with the traditional pot survey for red king crab. By 1987, the trawl survey had replaced the pot survey as the department primary assessment tool.

In 1982, the price per pound of live crabs increased from \$0.65 to \$1.65. The increasing value attracted new participants with 188 operators in 1981 rising to 348 by 1983. Reacting to increased fishing pressure, the BOF adopted regulations in 1983 to designate the South Peninsula and Chignik Districts as a combined superexclusive registration area. This meant vessels fishing for Tanner crabs in those districts could not fish Tanner crabs elsewhere in the state during that registration year. Additionally, the BOF reduced the Kodiak District pot limit from 250 to 200 pots per vessel.

In February 1984, a federal judge issued a restraining order restricting the State of Alaska from enforcing the superexclusive registration in Chignik and the South Peninsula Districts and the 200-pot limit in Kodiak outside of three miles. The BOF issued an emergency regulation rescinding the pot limit and superexclusive registration area to make state and federal regulations consistent.

Although the joint FMP was still in effect, there was considerable confusion over enforcement and effective dates of regulations. The FMP had been amended nine times in six years. The NPFMC voted to suspend the implementation of regulations for the Tanner crab FMP in 1986. The FMP was repealed at the request of the NPFMC, effective April 1987. Again, the State of Alaska exercised sole responsibility for the Tanner crab fishery in the Gulf of Alaska in both state and federal waters.

In 1990, the BOF adopted a new pot limit for Kodiak. This limit had a sliding scale that decreased the number of pots allowed, therefore harvest projections decreased. The limit ranged from 75 to 150 pots per vessel depending on projected harvest guidelines. As crab stocks and allowable harvest projections decreased, the pot limits reduced the amount of gear on the fishing grounds and made accurate inseason management possible. A pot limit of 75 pots per vessel was established beginning in 1993 regardless of the survey estimate. During the last three fishing seasons, 1991-1994, the harvest primarily came from the Eastside Section (Table 2-4). Due to a progressive decrease in the harvestable surplus of Tanner crabs around Kodiak area, the commercial fishery did not open for commercial fishing from 1994 to 1999.

In 1999, ADF&G presented the BOF with a comprehensive harvest strategy for Tanner crabs in the Kodiak District. The harvest strategy established thresholds of abundance that must be exceeded by a preseason trawl survey, for a commercial Tanner crab fishery to occur (Urban et al. 1999). The

harvest strategy also requires additional criteria to be in place for an opening of commercial Tanner crab in the Kodiak District. At least 400,000 pounds must be available with two sections exceeding guidelines for a fishery to occur. The harvest strategy includes a stair-step pot limit of 30, 40, or 60 pots per vessel depending on guideline harvest level (GHL) and restrictions on the hours that gear can be operated. The harvest strategy, as adopted by the BOF, can be found under 5 AAC 35.507 KODIAK, CHIGNIK, SOUTH PENINSULA DISTRICTS, *C. bairdi* TANNER CRAB HARVEST STRATEGIES in the shellfish regulations. Results of the 1999 trawl survey showed the Northeast and Eastside Sections above the thresholds specified within this newly adopted harvest strategy. A commercial opening was not allowed because of a requirement in the strategy that requires the threshold to be doubled following a year of closure. This reduced the pounds available for harvest to levels below the minimum.

2001 Tanner Crab Fishery

The regulatory harvest strategy contains minimum thresholds of one half the long-term average mature male abundance to be met or exceeded for a commercial fishery to occur. Results of the 2000 trawl survey in the Kodiak District resulted in two sections, the Northeast and Eastside Sections being above the established thresholds for the second consecutive year. Under the provisions of the harvest strategy, these sections could then open to a commercial fishery. Based on the analysis of the Tanner crab abundance and stock condition, guideline harvest levels (GHLs) were established at 200,000 pounds for the Eastside Section and 300,000 pounds for the Northeast Section (Table 2-5). Based on the district GHL of 500,000 pounds, the individual vessel pot limit would be 30. The commercial fishery was scheduled to open on January 15, 2001.

Interest in the fishery was high and it quickly became apparent that a large number of vessels would register for the fishery. Many of the vessel operators were participating to record a landing in the fishery in the event an entry limitation program was implemented in the future. In the weeks leading up to the fishery, ADF&G released a fishery management plan (publication number 4K00-65) and several news releases detailing the regulatory changes that had occurred since the last fishery in 1994. One hundred fifty-nine (159) vessels registered for the 2001 Kodiak District Tanner crab fishery.

Weather in the days before the fishery opening was very poor. Several severe storms passed through the area with more inclement weather in the long-term forecast for the tank inspection and fishery opening. At the request of several fishermen, ADF&G met with United States Coast Guard (USCG) and National Weather Service (NWS) personnel to discuss the latest weather forecast available on the morning of January 14. A lull in the weather was predicted for the 24-hour period following tank inspections. The USCG stated that they would be able to conduct search and rescue operations, should the need arise, with the predicted forecast. ADF&G chose not to delay the fishery opening based on this forecast as it appeared the fleet could safely travel to the fishing grounds and deploy gear before the onset of severe weather.

The fishery opened at noon on January 15, 2001. Gear could only be operated from 8:00 AM to 7:59 PM, daily; gear could be left bailed overnight through the 12 hours 'soak' period. On the day the fishery opened, gear could be operated from noon to 7:59 PM. Weather during this 8-hour opening period began deteriorating in the late afternoon and southwest winds up to 30 knots were experienced by early evening.

ADF&G planned on managing the fishery from voluntary inseason catch reports from the fleet. Approximately 20% of the fleet reported their catches after the first fishing period. Indications from these reports were that 60,000 pounds had been harvested in the Eastside Section and 35,000 pounds had been harvested in the Northeast Section. Some vessels had been hampered by the weather and stopped working their gear late in the day, while others were unable to work at all during the opening.

The second fishing period occurred on January 16 from 8:00 AM to 7:59 PM and weather during this period had not improved. Approximately 40% of the fleet reported their catches following this period. Information from participants in the Eastside Section indicated that catch per pot (CPUE) exceeded 48 crab per pot lift. This pushed the estimated harvest onboard to approximately 370,000 pounds above the established 275,000 pound GHL. The Eastside Section was closed with baited gear still on the grounds. Fishermen were not allowed to pull gear after the closure; instead, they were required to deliver their crab before unbaiting their pots and releasing the crab in them.

The harvest rates in the Northeast Section had not been as strong as the Eastside Section. Vessel operators reported a CPUE of 17 crabs per pot lift during the second fishing period. Half of the fleet was unable to work their gear because of the poor weather conditions. Severe weather continued on January 17 and 18. Vessels fishing in protected bays were the only ones that submitted daily inseason reports. In particular, CPUE within Kazakof Bay declined from 56 crabs per pot lift on the opening day to 10 on January 18. Most of the operators in that area submitted their catch reports in the afternoon on January 18. ADF&G was able to complete its calculations for harvest projections and announced a partial area closure at 8:00 PM on January 18. The closure area was for all waters of Kazakof Bay and was scheduled for January 19 at 2:00 PM.

After the remaining inseason reports from the Northeast Section were processed on the evening of January 18th, it was determined that several vessels had improved fishing in the more exposed and offshore areas. The weather forecast for January 19 was favorable and it was expected that the remainder of the Northeast Section GHL could be taken by the close of the daily fishing period. A closure of the entire Northeast Section was announced at 8:00 AM on January 19 to be effective at 7:59 PM on January 19, 2001. This action closed the remaining waters of the Kodiak District for the 2001 season.

Final harvest was different from estimates produced with inseason fleet reports. On any given day, no more than 40% of the fleet reported daily harvest effort. Estimates for the harvest in the remaining 60% of the fleet proved to be somewhat accurate in the Eastside Section and largely inaccurate in the Northeast Section. The final harvest in the Eastside Section was 379,763 pounds taken by 84 vessels and 92 permit holders. Three thousand two hundred twenty-six (3,226) pots were lifted in the tow-day fishery (20 hours total fishing time). Average catch per pot (CPUE) was 34 crabs. In the Northeast Section, the final harvest was only 130,644 pounds taken by 62 vessels and 65 permit holders. There were 4,007 pots lifted during the four-day fishery (44 hours total fishing time). CPUE for the Northeast Section was 17 crabs for the 2001 fishery.

The average pounds per delivery for the 2001 Kodiak District Tanner crab fishery was 2,330 pounds. Exvessel value for 2001 fishery was estimated at \$1.2 million dollars. The price per pound of \$2.30 reported on fishtickets was the third highest price ever paid for Kodiak Tanner crabs.

ADF&G conducted a dockside sampling program that measured 4,500 crabs from commercial deliveries. Average weights from the 2001 fishery were very similar to those seen in previous fisheries in these sections. Crabs from the Northeast Section weighed an average 2.4 pounds while Eastside Section animals weighed an average of 2.8 pounds. Average carapace width for crabs from the commercial fishery was 150.8 mm (5.9 inches). Data indicates that 67 % were new-shelled, 30% were old-shelled, and 3% were very old-shelled crabs.

Stock Status

ADF&G has conducted trawl surveys in the Gulf of Alaska to assess Tanner crab populations since 1980. Recent surveys have indicated increases in the number of mature male crabs in some sections of the Kodiak District. A substantial increase in the number of crabs below 80 mm has occurred throughout the district. Legal-size crab populations have remained low in sections other than the Eastside and Northeast. ADF&G has observed and recorded conditions of female egg clutches since the existence of the survey with few abnormalities observed. In most cases, egg clutches have been full of healthy looking eggs. Successful reproduction is substantiated by the high incidence of one and two-year-old crabs captured in the trawl survey.

The 2001 trawl survey completed 218 tows in the Kodiak District. The 2001 Tanner crab population estimates were the highest on record since the trawl survey series began in the late 1980s. The Kodiak District estimate of 175.9 million crabs of all sizes and sex was an increase over the 72.7 million crabs estimate in 2000. The number of legal crabs remained constant at 2.6 million crabs in both 2000 and 2001. Small male and female crabs less than 70-mm carapace width (CW) again accounted for a large percentage of the population; comprising 72% of crabs estimated by the survey. The highest densities of crabs were found in the Eastside Section (Figure 2-3); this is similar to the results of recent years surveys.

The 2000 estimates of mature male Tanner crabs in the Northeast and Eastside Sections of Kodiak were above the threshold of one-half the average long-term abundance (Table 2-5). The 2001 assessment was the third consecutive survey where the estimate of abundance and resulting GHLs were above the thresholds established in the regulatory harvest strategy. A commercial fishery occurred in these sections in 2001. The Northeast and Eastside sections of the Kodiak District were scheduled to open for commercial Tanner crab fishing on January 15, 2002.

The remaining sections of the Kodiak District remain below the established mature male abundance thresholds for a fishery opening. The Southeast and the Westside Sections were the two sections closest to the opening thresholds. All other sections are currently far below the established mark for a commercial fishery opening. Complete information on trawl survey results is available in the ADF&G Regional Information Report series.

DUNGENESS CRAB

Introduction

The Kodiak District for Dungeness crab are the waters of Registration Area J south of the latitude of Cape Douglas (58°51' 06" N lat.), west of the longitude of Cape Fairfield (148°50' 15 W long.) and east of the longitude of Kilokak Rocks (156°19' W long.). Dungeness crab are managed under a size, sex and season strategy. The commercial fishing is limited to males at least 6.5 inches CW. Part of the Kodiak District, north of the latitude of Boot Point east of Kodiak Island and north of Cape Ikolik west of the island, has a regulatory season from May 1 until January 1 (Figure 2-4). District waters south of Boot Point and Cape Ikolik, including Alitak Bay and near Tugidak Island, has a regulatory season from June 15 until January 1. No fishing independent stock assessment occurs.

Historic Background

Dungeness crabs were first harvested commercially in the Westward Region in 1962 when 1.9 million pounds were harvested from the Kodiak District (Table 2-6). Over the next decade, harvest continued to increase in the Kodiak District, reaching a record catch of 6.8 million pounds in 1968. Harvest declined through the 1970s as both stock levels and market value for Dungeness crabs decreased (Jackson 1997). Minor increases in recruitment led to slight production increases in harvest from the Kodiak District during the late 1970s.

Prior to 1977, the Dungeness crab fishery was open year round. Closures were first implemented by the BOF from January 1 to April 30 when fishermen were unable to operate effectively in the winter due to storms. This season change was aimed at reducing the amount of gear left fishing with extremely long soak times. Some gear had been left fishing all winter without being checked or maintained. The June 15 opening date was set for the south end of Kodiak to avoid high incidences of female red king crab bycatch in Dungeness gear.

During the early 1980s, declines in abundance of other commercially harvested Alaskan shellfish occurred and created a void in markets that still demanded crab. This led to an increase in both effort and harvest of Dungeness crabs in the Kodiak District. A harvest of 5.6 million pounds occurred in the 1981/82 Kodiak fishery. Effort peaked in 1985 when 125 vessels participated in the fishery. Many of the post-recruit crabs were removed from the district, resulting in lower harvests through the middle of the 1980s (Jackson 1997). In 1987, stocks experienced increasing recruitment that provided the bulk of the harvest through 1990.

The Kodiak District fishery has recently been prosecuted primarily on recruit crabs, new-shell male Dungeness crabs that have 165mm –193 mm CW (Figure 2-5). The fishery has experienced years of low harvest that correspond to fluctuations in recruitment. Reduced effort in part is responsible for decreased fishery production. Participation decreased from 64 vessels in 1990 to only 11 in 1998 and 2000.

Another significant factor limiting interest and effort in the Kodiak District Dungeness crab fishery during the 1990s was a lower market value. The toxin causing paralytic shellfish

poisoning (PSP) was documented in the viscera of Dungeness crabs. The Alaska Department of Environmental Conservation (DEC) placed restrictions on the sale of live and whole cooked crabs beginning in 1992. Prices paid for Kodiak Dungeness crabs dropped from \$1.37 per pound in 1991 to \$0.86 per pound in 1992 after the DEC restrictions took effect. Prices have fluctuated widely and reached a high of \$2.05 in 1997. Kodiak fishermen have received lower than average exvessel value when compared to other areas in Alaska or the West Coast of the lower 48 states in most years. The BOF created a new superexclusive Chignik District in 2001. The western boundary of the Kodiak District shifted from Cape Kumlik to Kilokak Rocks.

2001 Fishery

The 2001 fishery opened on May 1 in all areas except Kodiak's south end, which opened on June 15. Twenty-one vessels harvested 208,265 pounds from 57 landings (Table 2-6). The 2001 harvest and effort was the second lowest in the history of the fishery. The harvest in 2001 was less than half of the 1999 harvest and less than half the average harvest from 1995 to 1999. Only vessels less than 90 feet overall length participated in the 2001 fishery (Table 2-7).

Harvest peaked in July, but the number of participating vessels peaked in August (Figure 2-6). The majority of harvest during 2001 came from the Southeast Section (Table 2-8). This represents a shift back to the historic production area as the Eastside Section had produced the largest harvests during the previous two years.

An average of 2.4 legal crabs per pot were landed for the 2001 fishery; very similar to the CPUE from the 2000 season. It remained almost constant over the course of the commercial fishery. CPUE has historically been highest in the late summer months.

The exvessel value in 2001 was nearly the same as the previous year. Price paid per pound in 2001 averaged \$1.95, up from \$1.65 in 2000 and \$1.57 in 1999. This resulted in an exvessel fishery value of \$390,000. The exvessel values from the 2000 and 2001 fisheries are the lowest experienced since the early 1970s.

Stock Status

Dungeness crabs harvested in the Kodiak District had a mean CW of 175 mm in 2001. This was slightly larger than the 173 mm CW for the 1998-2000 seasons (Figure 2-5).

The percentage of post-recruit crabs taken in the commercial harvest decreased from 33% in 2000 to 12% in 2001. This may be an indication of increased recruitment to legal-size crabs or fewer post-recruit crab. CPUE remained relatively constant over the last two years and is similar to CPUE seen in some earlier seasons. There is no stock assessment for Dungeness crab in the Kodiak District. However, annual fishing performance suggests that stock size has decreased in the past few seasons.

KING CRAB

Introduction

The Kodiak Registration Area for king crab are the waters south of the latitude of Cape Douglas (58°51.1" N lat.), west of the longitude of Cape Fairfield (148°50.25' W long.) and east of the longitude of Cape Kumlik (157°27' W long.). The Kodiak Area is further subdivided into five districts for king crab management.

Red King Crab

Historic Background

Beginning in 1936, small amounts of red king crab *Paralithodes camtschaticus* were landed in Kodiak, but catches were not officially recorded until 1950. This period in the history of the fishery was exploratory in nature with fishermen developing gear, locating commercially harvestable quantities of crab and developing markets for product.

During the exploratory period, the federal Bureau of Commercial Fisheries (now National Marine Fisheries Service) was the management agency. Regulations in effect during this period provided for retaining only males with a minimum CW of 5½ inches. In 1949, the size limit was increased to 6½ inches CW.

King crab landings totaled 60,000 pounds in 1950 and the fishery became economically important to Alaska. From 1950 to 1959, the catch increased from 60,000 to 21 million pounds. In 1959, pots and ring nets were classified as the only legal gear and a pot limit of 30 pots per vessel was established for the Kodiak Area. Management authority was transferred to ADF&G, when Alaska gained statehood.

In 1960, the king crab season was open year round. Eight processors bought 21 million pounds of king crab at \$.09 per pound from 143 vessels (Table 2-9). In 1961, ADF&G recommended that more research was needed to determine the stock structure, breeding habits, ages, and size at maturity before effective conservation regulations could be instituted. In 1963, the minimum legal size limit was increased to 7 inches CW based on Kodiak area growth rate studies. These studies concluded that a 7 inch CW size limit would allow mature male king crab to breed at least one year before being recruited to the fishery.

In 1965, the 30 pot limit was repealed and a newshell crab closure went into effect from May 1 to June 30 (Table 2-10). ADF&G had completed king crab tagging studies and had defined four separate stocks of crab.

The development period peaked in 1966, when 175 vessels delivered over 90 million pounds of crab to 32 processors in a ten-month fishing season. In 1966, ADF&G added its first shellfish management biologist to staff. After examining 12,000 female king crabs, of which only 3 to 5 percent were barren, ADF&G stated that Kodiak king crab stocks were biologically sound. It appeared that a sufficient number of males were present to mate most of the females.

From 1967 to 1970, the king crab fishery expanded to offshore areas in an attempt to maintain the catch levels of previous years. In 1967, ADF&G started a test fishing program to locate concentrations of prerecruit crabs and to estimate future production. The first catch projections predicted a continuing decline in future catches. The 1967/1968 season catch dropped to 43 million pounds, 30 million pounds less than the prior year. Also in 1968, mature females examined from 8 different areas showed that 16% were not carrying eggs.

During the 1968/1969 season, the catch dropped to 18 million pounds and the fishery was closed by emergency order on February 28. ADF&G determined that in areas with an intensive commercial harvest, there was a higher incidence of barren females. In some areas, 25% of the females were barren, with a higher proportion of large barren females than small barren females. The fishery was dependent on a weak recruit class.

In July 1970, the Alaska Board of Fish and Game instituted a pot limit of 60 pots per vessel and established a catch quota system. ADF&G was directed to institute surveys for abundance estimates. The goals of the policy were:

1. To develop and establish a stable fishery, with the objective of eliminating fluctuating harvests characteristic of the historic fishery.
2. To develop and maintain a broad base of various age classes in order to insure breeding success.

By 1972, the decline had been reversed and harvests started increasing. The 1973 fishery lasted 10 days under a fixed quota system and the Southern District was reopened for an additional eight-day fishery.

In 1974, the BOF adopted an 8-inch CW minimum size limit for a second season, as proposed by the Kodiak Fish and Game Advisory Committee (KAC). Since it was indicated that an increase in harvest could be made, the BOF took a cautious approach and decided to increase exploitation on the older postrecruit crab. The BOF also adopted a flexible system of harvest guidelines rather than fixed quotas and directed ADF&G to continue managing the fishery with a multi-age-class management strategy based on analysis of crab stocks.

The harvest guideline system provided a more liberal approach to the harvest strategy. During the 1975/76 fishery, ADF&G tried to maximize the harvest within each district by dividing districts into schools and closing each school when a 33% fishing mortality was reached (based on in-season tag recoveries).

In 1978, the BOF lowered the minimum size limit of the second season from 8 inches to 7½ inches CW. ADF&G proposed the change because of the large amount of postrecruit crab available between 7½ and 8 inches that year. The 1978/79-second season recorded a harvest of 1.7 million pounds; similar to the 1.8 million pounds landed in the previous year. The lowered size limit increased recruit harvest during the second season from less than one percent under an 8-inch size limit to 15 percent the first year it was in effect. In 1979, the BOF increased the pot limit to 100 pots per vessel. The BOF adopted a management plan for Kodiak in 1981:

1. Individual stocks of crabs are to be managed as a single unit, and small closures that leave a portion of a stock open should be avoided;
2. Utilization of stocks should be based on overall stock size while considering recruit and postrecruit population levels;
3. A second season for 7½-inch crab will be provided with an opening between November 15 and December 15.

In addition, in 1981, the BOF increased the pot limit to 150 pots per vessel. The 1981/82 season harvest was the highest of the previous 13 years at 24.2 million pounds. The 1982/83 season total harvest declined to 8.7 million pounds, the lowest in 24 years. However, the value of the fishery was the second highest, worth \$32.7 million. The effort level for this fishery was also the highest on record with 309 vessels participating.

ADF&G did not open the red king crab fishery in 1983 due to poor stock condition. This was a result of poor recruitment to legal-sized crabs for the previous two years combined with continued low recruitment forecast for the next three years. The population of adult male crabs was the lowest recorded in 13 years of annual population assessments. ADF&G established threshold levels of legal males needed before considering any future fishery openings. The threshold of 10.3 million pounds of legal crabs was nearly twofold the 5.5 million pound estimate of the 1983 survey. Additionally in 1983, the BOF lowered the pot limit to 100 pots per vessel.

In 1984 and 1985, the estimate of legal males on the pot survey remained below the 10.3 million pound threshold level established for the Kodiak Area. However, in 1985 the estimate of legal males in the Southwest District was 4.9 million pounds. This was above the threshold value of 3.4 million pounds of legal crab established for the district. ADF&G proposed a 450,000 pound harvest and presented this proposal to the Kodiak Advisory Committee. After review of both ADF&G and industry views, the KAC voted unanimously to oppose a fishery in the Southwest District. Their concerns were that a small area open with a large effort level would be destructive to the reproductive potential of the stock. The commissioner of ADF&G acknowledged the KAC concerns and the Kodiak king crab fishery remained closed during 1985.

In 1986, the fishery again remained closed as the estimate of legal males was below threshold levels. ADF&G revised the management plan from a threshold of legal males needed for a fishery to a number of fertilized females needed to maintain maximum reproductive potential of the stocks when populations are depressed. This threshold level for the Kodiak Area is 5.1 million fertilized female red king crabs.

In 1987, a trawl survey was conducted throughout the management area for the first time to assess both red king and Tanner crab stocks. Previous ADF&G trawl surveys had been limited to Tanner crab assessment in Shelikof Strait and in portions of the Northeast and Eastside Sections of Kodiak Island. Offshore areas of Chignik and Pavlof Bay in the South Peninsula had also been surveyed. This trawl survey estimated a population of 310,000 adult female red king crab around Kodiak of which 47% were not carrying egg clutches. Additionally the estimate of legal males was 177,000 crabs, the lowest estimate in the history of the survey. The 1987 survey results indicated a continuation of the decline in red king crab abundance that had been noted the past five years and the commercial fishery again remained closed.

From 1988 to 2001, ADF&G conducted trawl surveys to assess king and Tanner crab populations around Kodiak Island, along the Alaska Peninsula, and around the Eastern Aleutian Islands. The Kodiak Area continued to remain closed because the abundance estimates of females were well below threshold levels. Complete information on the Westward Region trawl survey catches can be obtained from ADF&G in a series of Regional Information Reports.

The pot limit for commercial king crab fishing in the Kodiak area was reduced in 1993. A sliding scale of 25-75 pots per vessel was selected based on the projected harvest guideline. Although a fishery had not occurred in the prior 10 years, this public proposal was aimed at reducing effort when the fishery did reopen.

Stock Status

The Kodiak red king crab population remains at historically low levels, and fishing seasons for this species have remained closed since 1983. During the 2001 Kodiak trawl survey, ADF&G, completed 218 hauls in known crab habitat. The red king crab population was estimated to be 713,248 animals, of which 73,792 were legal-sized males. The majority of king crabs were found in the Southwest Section (Figure 2-7). The mature red king crab female population was estimated to be 347,833 animals, well below the 5.1 million threshold necessary for a fishery opening. Only 37% of the mature female crab sampled had an estimated ovigerity of 80% or greater indicating a continued depressed population status. The increase in both juvenile females and sublegal males contributed to the increase in the overall population estimate from 1999.

Golden King Crab

Interest in harvesting golden or brown king crab *Lithodes aquespinus* increased after the collapse of the red king crab stocks. Although golden kings were occasionally landed with red king crab in prior years, the first recorded landings occurred in 1983. In that year, 12 vessels explored around Kodiak Island finding limited resources. The catch totaled 111,398 pounds from 36 landings (Table 2-11). The largest harvest from this fishery totaled 146,478 pounds taken in 1986.

Management of the golden king crab fishery in Kodiak is guided by conditions of a permit issued by the commissioner. Fishers may use only 75 pots that may not be longlined. Additional requirements of the permit include restrictions on minimum fishing depth, delivery notification, and a logbook requirement. The minimum legal size for golden king crab in Kodiak was reduced by the BOF from 7-inch CW to 6 1/2 inches CW in 1985.

Since 1988, no more than two boats have participated in this fishery annually, resulting in confidential catch information. Average harvest from those years has been less than 1,600 pounds. During most years, there has been no activity at all. One vessel registered to fish golden king crab in the Kodiak Area during 2001 and the harvest data remains confidential. ADF&G does not assess golden king crab stocks in the Kodiak Area. Given the relative low interest in the commercial fishery, the population is believed to be small when compared to populations in the Bering Sea, Aleutian Islands, and inside waters of Southeast Alaska.

SHRIMP

Trawl Fishery Historic Background

The Westward Region shrimp fishery began with a harvest of 31,886 pounds in 1958. The fishery grew rapidly to an annual catch of near 11.0 million pounds in the early 1960s. The fishery slowed when shore plants and the fishing fleet were badly damaged by the 1964 earthquake and tsunami, but then quickly surged to a peak Kodiak District harvest of 82.2 million pounds in 1971 (Table 2-12). As Kodiak shrimp catches declined in the 1970s, much of the vessel effort shifted into the Chignik and South Peninsula Districts. The Westward Region harvest peaked in 1976 at 120 million pounds. Stock abundance and fisheries declined sharply thereafter. The northern pink shrimp *Pandalus borealis* has predominated the harvest contributing over 95% by weight. Other species landed included sidestriped *Pandalopsis dispar*, coonstripe *Pandalus hypsinotus*, spot *Pandalus platyceros* and humpy *Pandalus goniurus* shrimps.

No regulatory measures were promulgated in the Kodiak shrimp fishery until 1970 when an egg hatch closure was enacted during March and April for some bays and nearshore areas. In 1971, a quarterly quota system was adopted to provide harvest throughout the year while not allowing unrestricted harvest. In the late 1970s, the quarterly quota system was reduced to a single opening for certain areas and staggered opening dates for many of the fishing sections, while others retained two fishing periods in fall and winter. Most of the adjustments to season dates were due to industry's desire to spread harvest over a longer time period while trying to prevent conflicts with vessels and processing in other fisheries. In addition, during the late 1970s, stocks in some areas were not large enough to support fisheries, and these areas were closed by emergency order.

ADF&G initiated a voluntary logbook program in 1967. The resulting database, plus data from trawl surveys conducted by ADF&G since the early 1970s, provided a means for establishing harvest levels. The system was flexible during its development stage, but in 1981, the industry requested this management scheme be defined and adopted into regulation. This led to the WESTWARD REGION SHRIMP MANAGEMENT PLAN, which was approved by the BOF in 1982. The objectives of this management plan were to maintain shrimp stocks at a level termed "representative biomass index" (RBI) determined by survey trawls, while allowing a fishery during rebuilding periods. A minimum level at which any harvest would occur was established and termed the "minimum acceptable biomass index" (MABI).

Concurrent with approval of the WESTWARD REGION SHRIMP MANAGEMENT PLAN, the BOF also enacted an additional management strategy as an "economic alternative" known as the MAINLAND SHRIMP MANAGEMENT PLAN. This alternative strategy allowed shrimp fishing in some bays on the Alaska Peninsula and around Afognak Island regardless of survey results. In September of 1997, the BOF repealed the MAINLAND SHRIMP MANAGEMENT PLAN due to concerns about the lack of information needed for the sustainability of the fishery. This left only the General Section comprising offshore areas open annually from June 15 through February 28 (Figure 2-8). Much of the state waters within the general section are closed to non-pelagic trawls, including standard and beam shrimp trawl nets.

The General Section has no assessment surveys conducted nor is there any established MABI. ADF&G requires vessels registering in the General Section to provide logbooks for fishery

information for management and research. There has been little commercial harvest effort in the General Section in the past decade, with no effort in most years. The highest harvest in that time has been 11,905 pounds, landed in 1997/98 by four vessels.

2000/01 Fishery

One vessel registered for the shrimp trawl fishery in the General Section in 2000/01. The data associated with the effort of that vessel remain confidential. However, the combined data from the years 1998-2001 results in 16 landings by four unique vessels with a total harvest of 23,309 pounds. Over 90% of the shrimp harvested were pink shrimp with the remaining percentage being composed of sidestriped shrimp. The majority of the 1998-2001 shrimp harvest was sold unprocessed off the docks in Kodiak and Homer. Fishermen verbally reported prices of up to \$3.99 per pound for dockside sales of sidestriped shrimps and an average of \$0.55 per pound for pink shrimp.

Status of Stocks

ADF&G has continued to survey shrimp stocks from some essential historic areas of production on a triennial basis (Table 2-13). The most recent survey was conducted in September and October of 2001. Sixty-eight stations were sampled around the Kodiak archipelago and along the Alaska Peninsula. Preliminary results from the 2001 survey showed a general trend of increase in shrimp abundance within the Kodiak area. Areas along Kodiak Island's eastside showed minor decreases while areas such as Marmot and Wide Bays showed substantial increases. Marmot Bay increased from 1.10 million pounds in 1998 to 5.70 million pounds in 2001. Wide Bay was not surveyed in 1998 but in 1995, the estimated biomass was 80,000 pounds. In the 2001 survey, Wide Bay had an estimated biomass of 2.0 million pounds.

Though many of these areas have had dramatic increases in population estimates, only Wide Bay is currently above the established MABI. Additionally, most of these near shore areas, including Wide Bay, are within the non-pelagic trawl closures further complicating the possibility of a commercial fishery opening. The Westward Region shrimp management plan requires the department to address fourteen points in development of a plan to reopen sections currently closed. The next shrimp survey is scheduled for the fall of 2002.

Complete information on the Westward Region shrimp trawl survey catches can be obtained from ADF&G in a series of Regional Information Reports.

Pot Shrimp Fishery

Pot fishing for shrimp has never been a large fishery in Kodiak and is virtually nonexistent in the rest of the region. The West and North Afognak Sections, along with the Mainland Section, were closed to pots and trawls by the 1997 BOF action contained in 5AAC 31.590 WESTWARD AREA SHRIMP FISHERIES MANAGEMENT PLAN. In all other areas, shrimp may be taken year round with pots. ADF&G requires a logbook to be submitted with fishtickets from all landings of pot caught shrimp. The largest landing of product was less than 19,000 pounds of spot shrimp tails in 1983

(Table 2-14). One vessel was registered to pot fish for shrimp in 2001 and landing information remains confidential.

KODIAK AND CHIGNIK SEA CUCUMBER FISHERY

Historic Background

Red sea cucumbers *Parastichopus californicus* were not harvested commercially in the Westward Region until 1991. In 1991 and 1992, processors recruited divers to gather small numbers of red sea cucumbers in the Kodiak and Chignik areas to test marketability. In the spring of 1993, several processors gathered divers to prosecute a commercial fishery for red sea cucumbers in those same areas. The fishery was allowed to develop under the terms of a permit authorized by 5 AAC 38.062 of the ADF&G Commercial Shellfish Regulations. ADF&G specified dive gear as the only legal gear and required dive logs to be submitted with fish tickets. Each diver was required to have a CFEC interim use permit card. Harvests were monitored to determine abundance and distribution. As the harvest reached levels where ADF&G felt there was a potential for overfishing, the various fishing areas were closed. The 1993 harvest of 564,516 pounds was taken by 50 dive permit holders (Table 2-15).

In February of 1994, ADF&G announced several management measures intended to prevent overharvest of the red sea cucumber resource. A seasonal closure from May 1 through September 30 was established to protect the spawning aggregates of red sea cucumbers. In addition, GHGs were established for the Kodiak and Chignik Districts. A total of 200,000 pounds was announced for Kodiak with the Chignik GHG set at 50,000 pounds. Management areas based on the Tanner crab fishing sections were utilized in Kodiak in an attempt to spread the effort and harvest around the island and prevent localized depletions (Figure 2-2). A GHG was set for each of the individual areas based on historic production and fisheries performance. Registration permit provisions included a weekly fishing period of 5 days and daily dive logs submitted by the divers with their fish tickets and the fishery was reopened April 1, 1994 and closed on April 30.

Following the May 1 to September 30 closure in 1994, ADF&G again opened the Westward Region to red sea cucumber fishing. GHGs for the Kodiak and Chignik Districts combined during the 1994/95 season totaled 225,000 pounds with 3 day weekly fishing periods. The shortened fishing periods were set to allow ADF&G a better opportunity to assess inseason fishery performance. GHGs were quickly reached in the sections surrounding Kodiak Island, but the Mainland Section and Chignik District received little effort and remained open for the duration of the established season.

The 1995/1996 sea cucumber fishing season opened on October 1, 1995. Evaluation of another year of fishery performance resulted in a decreased GHG. The combined GHG for the Kodiak and Chignik Districts was set at 160,000 pounds. Effort again concentrated on the Eastside, Southeast, Southwest, and Westside Sections of Kodiak. Although outlying areas along the Alaska Peninsula have historically remained open for the duration of the regulatory season, divers were reluctant to cross Shelikof Strait in the face of stormy weather and the expectation of marginal returns. From 1998-2001, the fishery has followed a similar pattern of approximately

five fishing periods of varying length occurring before the areas around Kodiak Island obtained their respective GHLs and were closed for the season (Figure 2-9). Relatively little historic effort has occurred in the Chignik District since the initial exploration. The development of sea cucumber dive fisheries in both Kodiak and Chignik are very closely related. Therefore, the Chignik District information will continue to be reported in the Kodiak section of this Area Management Report.

2001/02 Fishery

The season opened on October 1, 2001 with a GHL for the Kodiak and Chignik areas of 140,000 pounds. The Kodiak Area was further subdivided into sections with individual GHLs. Management strategy was the same as previous years with a three-day open period per week, and dive logs required with each fish ticket. For the 2001 fishery, ADF&G again requested latitude and longitude information for each dive and requested that each dive be recorded on a separate line within the logbook.

First period, October 1 to October 3

Effort was consistent with historical patterns exhibited by the fleet; the majority of harvest activity occurred in the Eastside and Southeast Sections of the Kodiak District during the first commercial fishing period. Thirteen individual divers participated in the first period, all of whom made landings from the Eastside Section. Three of the thirteen also participated briefly in the Southeast Section. Harvest from the first period was 43,750 pounds from the Eastside Section and 14,461 pounds from the Southeast Section. Based on the harvest in the first period, the Eastside Section was closed for the remainder of the season and the Southeast Section was to open for one day in the second three-day fishing period.

Second period, October 8 to October 10

In the second fishing period, sixteen divers participated in the Westside Section. The harvest of 39,517 pounds left less than 2% of the GHL to be harvested; therefore, the Westside Section was closed for the remainder of the season. This harvest pattern was a change in behavior by the diver fleet. Typically, the early season effort has been concentrated on the eastside and south end of Kodiak Island.

Fewer than three divers participated in the Southeast and Southwest Sections during the second fishery opening. The harvest is confidential. Based on the cumulative total harvest and expected participation levels for the third fishing period, the Southeast Section was opened for 1.5 days. All remaining sections not previously closed, including the Southwest Section, opened for the full three-day fishing period.

Third period, October 15 to October 17

During the third fishing period, dive effort was concentrated in the Southeast and Southwest Sections. Minor harvest occurred in the Northeast Section. Eight divers harvested over 24,000 pounds from the Southeast Section; this brought the cumulative total for the section to 47,046 pounds. As this total harvest exceeded the GHL of 30,000 pounds, the Southeast Section was

closed for the remainder of the season. Six divers took 15,148 pounds from the Southwest Section, bringing the total harvest to 17,658 pounds. The Southwest Section harvest was slightly under the established GHL of 20,000 pounds but was closed for the remainder of the season as well.

Four divers harvested 1,130 pounds from the Northeast Section. With the majority of the productive sections in proximity to Kodiak having closed, the most of the divers in the commercial fishery quit for the season. Some divers expressed an interest in harvesting the remaining pounds on the Northeast Section GHL, so the Northeast was opened for one day of fishing in the fourth period with all remaining open sections open for three days.

Fourth period, October 22-24

Four divers reported minor landings from the October 22 opening in the Northeast Section during the fourth scheduled fishing period. Weather on the day the section was open hampered diver operations. ADF&G announced an eight-hour fishing period on October 23 to allow the remaining participants opportunity to harvest the remaining 2,500 pounds in the Northeast Section GHL. Four divers reported landings of approximately 2,400 pounds from this eight-hour opening. This brought the total harvest to slightly less than 5,000 pounds, therefore the Northeast Section closed for the remainder of the season.

After the openings in the fourth period, the remaining participants stated they did not intend to fish the Mainland Section or Chignik District in 2001. In addition, the sole sea cucumber buyer in Kodiak stated that it would not purchase sea cucumbers after November 1, 2001. Final harvest data, by section or district, for the 2001 sea cucumber fishery is shown in Table 2-16.

Stock Status

There are no population estimates for red sea cucumbers in the Westward Region. Following the establishment of conservative GHLs in 1995, catch rates estimated from diver logbook data in the commercial fishery have remained stable in recent years. Actual biomass levels, especially at depths unavailable to divers, are unknown. Near shore initiative research funding has been procured and will be utilized for some preliminary dive and video assessment of red sea cucumber populations around Kodiak Island beginning in 2002.

SEA URCHINS

Historic Background

The green sea urchin *Strongylocentrotus droebachiensis* was not harvested commercially in the Westward Region until 1980 when a small amount was taken in the Kodiak area to test marketability. There was little further interest in green sea urchins in Kodiak until 1985 when several thousand pounds were harvested. In 1986, the harvest increased with more divers participating. Peak harvest occurred in 1988 at 190,509 pounds (Table 2-17). Green sea urchins are usually shipped live to Japan for processing.

Red sea urchins *Strongylocentrotus franciscanus* are widely harvested in Southeast Alaska and along the west coast of Canada and the lower 48 states. Red sea urchins are found in extremely small quantities in the Kodiak Area. Their abundance is insufficient to support a commercial fishery.

Fishermen participate in the green sea urchin fishery under the terms of a miscellaneous shellfish permit as authorized in 5 AAC 38.062. Commercial fishing regulations set the season at October 1 to January 31. While marketable roe may be available at other times of the year, the potential is high for increased sorting and handling mortality of unmarketable green sea urchins.

Action by the BOF in March of 1997 authorized the use of 4-foot rakes for taking urchins, but the BOF re-affirmed its opposition to the use of pots in the urchin fishery. Pot gear could result in unacceptable handling mortality of unmarketable green sea urchins and bycatch of crab. Enforcement concerns had also been raised for pot gear. The prime green sea urchin season coincided with the historical Tanner crab fishery and it was feared that under the guise of green sea urchin pot fishing, fishermen could prospect for Tanner crab. There are currently no size limits for green sea urchins in regulation. However, buyers have only purchased green sea urchins that are approximately 2 or 2¼ inches or greater in test diameter.

In 2000, ADF&G worked to develop conservative GHGs for the green sea urchin fisheries based on historic harvest information. The sections utilized for Tanner crab and sea cucumber management were adopted for green sea urchin management. Sections that lacked historic harvest data were assigned a 5,000 pound GHG. Sections that had been previously explored and had some prior harvest were assigned a 10,000 pound GHG to prevent local depletion. For future management, ADF&G will work closely with fishery participants to collect baseline biological data from the green urchin fishery and may adjust these established GHGs.

2001/02 Green Sea Urchin Fishery

Two divers registered to harvest green sea urchins in the Kodiak Area during 2001/02. Only one diver made landings and acted as the only processor, shipping live product to Japan for sale. All harvest information is confidential because fewer than three divers or processors participated in the fishery. As has been typical in recent years, although the sea urchin and sea cucumber seasons both open on October 1, interest in urchin harvesting occurred only after the Kodiak Island waters closed to sea cucumber harvesting.

Stock Status

No stock assessment work is currently being done on green sea urchin populations in the Westward Region. The sole fishery participant this year worked with ADF&G to ensure that deliveries were sampled before processing or shipping. In addition to determining the spawning condition, roe content, and test diameter, age structures were collected from urchin harvests. Given the low effort levels in the fishery, data from logbooks on CPUE varies widely and does not lend itself to good inferences on stock status. Fishery information indicates the biomass is not large when compared to other areas on the Pacific Coast and when compared to an annual worldwide sea urchin harvest estimated at 100 million pounds (Lourie and Sanders 2000).

OCTOPUS

Introduction

The giant Pacific octopus *Octopus dofleini* exists throughout Alaskan waters and is abundant in the Kodiak Area. Most recorded catches have been incidental to other commercial fishing activities with the majority being taken in pot and less frequently by bottom trawl gear.

Historic Background

Octopus is considered a groundfish species by National Marine Fisheries Service (NMFS) and a shellfish species under ADF&G management classifications. Before 1985, no distinction was made between state and federal waters regarding octopus harvest. In the period from 1977 to 1984, the highest recorded harvest was 19,342 pounds taken from the Kodiak Area in 1980 (Table 2-18). During this period, much of the octopus harvested was used as bait or kept for personal consumption and was not reported on fishtickets. Therefore, harvests were likely higher than indicated.

The octopus fishery experienced a dramatic increase in the 1990s. The decline of many crab stocks in the Gulf of Alaska resulted in reduced harvest opportunity or fishery closures for many of the crab fisheries that had been prosecuted from late fall to early spring with pot gear. To fill the void, many pot-gear fishermen turned to Pacific cod *Gadus macrocephalus* in those months. ADF&G worked with industry to ensure that all octopus harvest, particularly harvests that were not sold but retained as bait, was documented on fish tickets. ADF&G also began requiring vessels to specify, at the time of registration for groundfish fisheries, their intent to retain octopus as bycatch. Octopus has long been sought after as bait in the Pacific halibut *Hippoglossoides elassodon* longline fisheries and is being used extensively in the Pacific cod pot fisheries as bait. Periodic episodes of favorable market conditions also resulted in large amounts of octopus sold to processors. In some years, such as 1990, the average exvessel price was \$1.08 per pound.

The majority of octopus harvest since 1985 has occurred within state waters (Table 2-19). In 1991, 107,030 pounds of octopus were harvested from state waters in the Kodiak Area. In that same year, 27,936 pounds of octopus were harvested from federal waters in the Kodiak Area. Octopus harvest decreased substantially in the mid-1990s, only to increase sharply with the advent of the state-managed Pacific cod fisheries in 1997. In 1997, a total of 238,954 pounds of octopus were harvested in state and federal waters, with approximately 80% from state waters. Harvest reached an all time high in 1998 with a combined state and federal harvest of 331,935 pounds.

In 2001, ADF&G adopted a revised product recovery rate for octopus that had been designated as gutted on fishtickets. This resulted in some historic fish ticket data being adjusted. Consequently, data presented here may differ from previously published reports.

2001 Fishery

ADF&G changed how it allowed octopus fisheries to be prosecuted in 2001. Historically, vessels registering for groundfish or shellfish fisheries were allowed to register for octopus fishing in addition to the target species registration, if they held valid CFEC permits for both the target species and octopus. This practice had allowed fishermen to retain up to 100% of the octopus taken as bycatch in target fisheries. Instead of allowing this dual fishery situation to continue, ADF&G mandated that vessels could not be validly registered for both octopus and another fishery at the same time. Therefore, vessels actually targeting groundfish or shellfish could only retain 20% of the octopus bycatch they caught. To retain higher amounts of octopus, vessels would be required to register specifically for octopus, maintain a logbook that had to be submitted with fishtickets, potentially have restrictions placed on areas for gear operation, or carry an observer. ADF&G asked fisherman to designate or report if they would be using baited or habitat gear for traps. Vessels registered for octopus were not allowed to sell any bycatch of other species.

Two fishermen registered to fish in 2001. To maintain confidentiality, their harvest is reported with all landed octopus bycatch for the year. Twenty-eight vessels made 258 landings for a total harvest of 99,671 pounds from state waters. Thirty-eight vessels harvested 14,606 pounds of octopus from 156 landings from federal waters of the Kodiak Area (Table 2-19). Many of the fish tickets submitted indicated octopus were being retained for use as bait. Additionally, few fish tickets had a value associated with octopus landings. Tickets with price information listed an average of \$0.38 per pound for an estimated exvessel fishery value of \$43,425 for the state and federal water harvest combined.

Stock Status

ADF&G does not currently assess octopus populations in the Westward Region.

RAZOR CLAMS

Historic Background

The Alaska razor *Siliqua alta* and Pacific razor *Siliqua patula* have been harvested in the Kodiak Management Area from the early 1920s through 1986. Though many Kodiak Island beaches were explored with some success, the principal commercial harvest occurred about 70 miles northwest of Kodiak in the Kukak Bay, Hallo Bay, Big River, and Swikshak Beach regions of the Alaska Peninsula. Digging continued on a somewhat regular basis until the early 1960s when a combination of increasing federal and state clam processing regulations, poor market conditions, and the 1964 earthquake precipitated a decline in harvests. Commercial harvesting of clams for human consumption has not been re-established and the fishery has been strictly hand digging for use as bait in the Dungeness crab fishery. The certification program conducted by the Alaska Department of Environmental Conservation (DEC) ended in July 1980. Currently, there are no clam beaches in the Kodiak Area commercially certified as safe for human consumption.

Many of the principal harvest areas along the Alaska Peninsula are adjacent to the Katmai National Monument, which includes all the land above mean high water from Cape Douglas to Cape Kubugakli. Commercial activity within the monument is restricted by the current policy of the U.S. Park Service that dictates a ban on camping in the monument in support of a business enterprise. In 1986, the BOF adopted a regulation prohibiting hydraulic mechanical dredges from harvesting clams in the Kodiak Area east of Kilokak Rocks.

Stock Status

The potential for a razor clam harvest in the Kodiak Management Area has been established by historic catch records and studies conducted by ADF&G. These studies, however, were conducted in the mid-1970s and are of little benefit in judging stock status at this time. There were no landings of clams from the Kodiak Area during 2001 (Table 2-20). Recent information from sport harvesters indicates that a change has occurred in the substrate structure of the beaches of Kukak Bay and Swikshak Beach. Reports indicate that beaches have eroded considerably resulting in a loss of productive habitat.

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Table 2-1. Landings and values of shellfish fisheries to the Port of Kodiak, 2001.

Species	Pounds ^a	Exvessel Value (Dollars)
Green sea urchins	confidential ^c	confidential ^c
Shrimp ^b	confidential ^c	confidential ^c
Bering Sea snow crab	1,358,379	2,079,801
Bristol Bay red king crab	817,916	1,821,955
Kodiak Tanner crab	510,401	1,173,936
Weathervane scallops	258,187	1,071,476
Dungeness crab	208,265	392,080
Red Sea Cucumbers	175,725	234,679
Octopus ^d	114,277	43,425
TOTAL	3,443,150	6,817,352

^a Represents pounds of product landed at the Port of Kodiak including harvest outside the Kodiak Management Area.

^b All species, primarily pink and sidestriped shrimp.

^c Less than three vessels or processors participated.

^d Harvest from shellfish and groundfish landings.

Source: Alaska Department of Fish and Game fishticket data base, January 2001.

Table 2-2. Shellfish emergency orders issued for the Kodiak Management Area, 2001.

Emergency Order	Effective Date	Explanation
<u>Tanner Crab</u>		
4-5-02-01	January 17, 2001	Closed Eastside Section of the Kodiak District to Tanner crab fishing for 2001.
4-5-04-01	January 19, 2001	Closed Kazakov Bay in the Northeast Section of the Kodiak District 2001.
<u>Sea Cucumbers</u>		
4-S-11-01	October 8, 2001	Opened the sea cucumber fishery in the Eastside Section of the Kodiak District for six hours, and opened the Southeast Section for a 24 hour opening on October 9, 2001. Opened all remaining sections in the Kodiak District for three days on October 8, 2001.
4-S-12-01	October 15, 2001	Opened the sea cucumber fishery in the Southeast Section of the Kodiak District for 26 hours on October 15, 2001. Closed the Eastside and Westside Sections of the Kodiak District for the remainder of the 2001/02 season. Opened all remaining sections in the Kodiak District for three days beginning on October 15, 2001 .
4-S-14-01	October 23, 2001	Opened the sea cucumber fishery in the Northeast Section of the Kodiak District for eight hours on October 23, 2001.
4-S-15-01	October 29, 2001	Opened the sea cucumber fishery in the Southwest Section of the Kodiak District for 24 hours on October 29, 2001, and opened the North and South Mainland Section of the Kodiak District for two days on October 29 and 30, 2001.
<u>King Crab</u>		
4-S-10-01	September 9, 2001	Closes the king crab fishery in the Kodiak Area for the 2001 season.

Table 2-3. Commercial catch and effort for the Tanner crab *Chionoecetes bairdi* fishery for the Kodiak Management District, 1967-2001.

Year	Vessels	Landings	Number of Crab	Number of Pounds	Pots Lifted	CPUE	Average Weight	Price Per Pound (\$)
1967	NA	83	NA	110,961	NA	NA	NA	0.07
1968	NA	817	NA	2,560,687	NA	NA	NA	0.10
1969	85	955	NA	6,827,312	72,748	43	NA	0.11
1969/70	67	833	3,237,244	8,416,782	78,266	42	2.6	0.11
1970/71	82	453	2,686,067	6,744,163	60,967	44	2.5	0.11
1971/72	46	505	3,878,618	9,475,902	65,907	59	2.4	0.13
1972/73	105	1,466	13,609,688	30,699,777	188,158	72	2.3	0.17
1973/74	123	1,741	11,857,573	29,820,899	217,523	55	2.5	0.20
1974/75	74	471	5,459,940	13,649,966	73,826	74	2.5	0.17
1975/76	104	1,168	10,748,958	27,336,909	199,304	54	2.5	0.20
1976/77	102	998	7,830,727	20,720,079	164,213	48	2.6	0.33
1977/78	148	1,483	12,401,243	33,281,472	251,621	49	2.6	0.43
1978/79	218	1,225	10,702,829	29,173,807	275,455	38	2.7	0.55
1979/80	211	1,385	6,813,128	18,623,875	282,946	24	2.7	0.55
1980/81	188	771	4,398,631	11,748,629	174,351	25	2.7	0.65
1981/82	221	950	5,413,467	13,756,159	230,403	24	2.5	1.65
1982/83	348	1,439	7,744,812	18,927,061	377,562	21	2.4	1.25
1983/84	303	1,229	5,891,968	14,478,066	303,764	19	2.5	1.20
1984/85	214	710	4,567,037	12,024,553	176,830	26	2.6	1.50
1985/86	233	601	3,457,930	8,996,151	160,808	21	2.6	1.90
1986/87	189	503	1,830,365	4,833,473	110,963	16	2.6	2.62
1987/88	176	557	1,614,874	3,888,906	101,488	16	2.4	2.40
1988/89	171	567	2,106,320	5,208,999	86,556	24	2.5	3.05
1989/90	233	548	1,435,477	3,456,314	97,333	15	2.4	2.40
1990/91	137	448	764,107	1,917,713	54,110	14	2.5	1.59
1991/92	143	434	982,391	2,400,213	47,384	20	2.4	2.22
1992/93	140	353	518,982	1,318,446	43,528	12	2.5	2.10
1993/94	129	378	510,681	1,252,342	41,527	12	2.5	2.25
1994/95 to 1999/2000			NO COMMERCIAL FISHERY					
2000/2001	144	219	193,138	510,407	7,233	27	2.6	2.30
TOTAL	NA	NA	130,463,057	341,649,616	3,937,541	NA	NA	NA
AVERAGE ^a	162	827	5,218,522	12,201,772	140,626	31	2.6	NA

^a Average of years fished.

Table 2-4. Tanner crab *Chionoecetes bairdi* catch in pounds by fishing section for the Kodiak Management District, 1991/92-2000/01.

Section	1991/92	1992/93	1993/94	1994/95 through 1999/2000	2000/01
Northeast	381,512	264,913	238,076	Closed	130,644
Eastside	2,018,701	728,191	395,062	Closed	379,763
Southeast	Closed	Closed	Closed	Closed	Closed
Southwest	Closed	325,342	279,077	Closed	Closed
Semidi Islands	Closed	Closed	Closed	Closed	Closed
North Mainland ^a	Closed	Closed	340,127	Closed	Closed
South Mainland	Closed	Closed	0	Closed	Closed
Westside	Closed	Closed	Closed	Closed	Closed
Total	2,400,213	1,318,446	1,252,342	-0-	510,407

^aNorth Mainland catch includes South Mainland and Semidi Islands because less than three vessels participated.

Table 2-5. ADF&G Kodiak Area Tanner crab population estimates and GHL determination for the 2000/01 fishery.

Section	Mature Male Crab Threshold (Number)	Mature Male Crab 2000 Estimate (No.)	Status	Molting Mature Male Crab (No.)	Harvest Rate	Harvestable Crabs (No.)	GH L (pounds)
Northeast	1,123,000	2,439,855	Above	1,503,431	20%	135,324	300,000
Eastside	1,552,000	2,466,608	Above	677,185	10%	381,762	200,000
Southeast	733,000	611,657	Below	-----No commercial fishery opening-----			
Southwest	1,236,000	318,466	Below	-----No commercial fishery opening-----			
Westside	764,000	623,087	Below	-----No commercial fishery opening-----			
North Mainland	1,469,000	599,876	Below	-----No commercial fishery opening-----			

Molting mature males are crabs 114 mm or greater in carapace width.

Table 2-6. Dungeness crab *Cancer magister* commercial catch and effort by fishing year for the Kodiak Management District, 1962-2001.

Year	Vessels	Landings	Number of Crab	Number of Pounds	Pots Lifted	Average Lbs Per Landing	CPUE	Average Price Per Pound (\$)	Exvessel Value (\$)
1962 ^a	NA	149	NA	1,904,567	NA	12,782	NA	0.09	171,000
1963	NA	354	NA	2,487,512	NA	7,026	NA	0.09	224,000
1964	29	395	NA	4,254,565	NA	10,537	NA	0.09	375,000
1965	25	351	NA	3,311,571	NA	9,434	NA	0.12	397,000
1966	12	144	NA	1,416,174	NA	7,976	NA	0.13	149,000
1967	18	439	NA	6,663,668	NA	15,179	NA	0.13	866,000
1968	43	536	NA	6,829,061	NA	12,741	NA	0.14	956,000
1969	29	455	NA	5,834,628	190,967	12,823	12	0.16	934,000
1970	33	318	-	5,741,438	249,800	18,005	9	0.14	804,000
1971	24	173	515,653	1,445,864	90,913	8,358	6	0.18	260,000
1972	34	316	766,960	2,059,536	140,921	6,517	6	0.40	824,000
1973	42	487	879,484	2,000,526	251,467	4,108	3	0.50	1,000,000
1974	23	172	337,839	750,057	104,062	4,361	3	0.47	353,000
1975	15	154	307,272	639,813	76,411	4,154	4	0.61	390,000
1976	4	6	38,072	87,110	4,410	14,518	9	0.15	13,000
1977 ^b					Confidential				
1978	20	173	618,357	1,362,306	93,633	7,875	6	0.75	1,022,000
1979	28	237	595,850	1,311,275	137,951	5,543	4	0.75	943,000
1980	21	197	968,829	2,011,736	107,261	10,212	9	0.45	905,000
1981/82 ^c	50	466	2,614,545	5,566,463	295,138	11,945	9	0.70	3,897,000
1982/83 ^d	111	991	2,004,075	4,546,311	481,542	4,588	4	0.75	3,410,000
1983/84	103	1,079	2,044,505	4,752,148	503,464	4,408	4	1.05	4,989,000
1984/85 ^e	106	1,163	2,393,974	5,303,052	627,441	4,564	4	1.45	7,689,000
1985 ^e	125	1,243	1,791,446	4,160,435	599,291	3,347	3	1.20	4,992,522
1986	81	577	439,738	967,423	199,881	1,667	2	1.15	1,112,500
1987	45	379	747,117	1,450,983	150,067	3,828	5	1.26	1,828,000

-Continued-

Table 2-6. (page 2 of 2)

Year	Vessels	Landings	Number of Crab	Number of Pounds	Pots Lifted	Average Lbs Per Landing	CPUE	Average Price Per Pound (\$)	Exvessel Value (\$)
1988	50	363	1,064,387	2,125,114	203,217	5,854	5	1.06	2,253,000
1989	47	359	1,428,973	3,077,937	185,242	8,574	8	1.10	3,385,730
1990	62	519	1,294,241	2,937,306	296,168	5,660	5	1.54	4,435,000
1991	62	732	695,470	1,414,499	279,872	1,932	1	1.37	1,938,000
1992	46	501	805,215	1,656,793	218,602	3,306	3	0.86	1,425,000
1993	42	263	647,736	1,369,889	180,534	5,209	5	0.92	1,260,000
1994	31	162	426,848	948,461	151,888	5,855	5	1.20	1,138,000
1995	24	106	257,677	527,434	107,506	4,976	4	1.72	907,000
1996	21	113	334,237	668,772	88,682	4,223	4	1.01	675,460
1997	21	123	257,692	529,601	95,067	4,296	3	2.05	1,085,682
1998	11	58	185,087	370,836	63,837	6,394	3	1.41	518,606
1999	18	70	269,244	550,568	64,552	7,865	4	1.57	861,919
2000	11	64	116,459	236,921	52,563	3,702	3	1.65	390,920
2001	21	57	101,371	208,265	41,760	3,653	2	1.95	392,080

^aSeason open year round 1962 - 1976

^bOpen April 15 through December 31, 1977 - 1980

^cOpen February 27, 1981 through February 1, 1982

^dOpen May 1, 1982 through February 1, 1983

^eOpen May 1, 1985 through December 31, 1985

Table 2-7. Keel length frequencies of vessels landing Dungeness crab during the 2001 Kodiak District fishing season.

Vessel Keel Length (feet)	Number of Vessels
<20-29	1
30-39	5
40-49	6
50-59	3
60-69	5
70-79	0
80-89	1
≥ 90	0
TOTAL VESSELS:	21

Table 2-8. Dungeness crab commercial harvest (in pounds) by fishing section, Kodiak Management District, 1992-2001.

Section	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Northeast	201,984	34,080	7,725	4,222	6,865	2,523	---- ^a	16,155	9,713	3,630
Eastside	270,370	115,421	75,740	101,333	132,617	97,221	104,177	319,336	130,129	68,236
Southeast	859,492	776,258	637,338	331,609	422,682	343,310	244,880	197,835	65,847	126,735
Southwest	89,342	95,128	34,038	52,804	62,938	52,035	8,609	---- ^a	31,232 ^d	7,240 ^g
N. Mainland	36,202	68,325	19,987	---- ^a	22,028	26,087	0	10,820 ^f	---- ^a	---- ^a
S. Mainland	0	^b	^d	0	0	3702	0	---- ^a	0	0
Westside	199,403	280,677	173,633	37,466 ^c	21,592	4,723	13,170 ^e	6,422	0	2,324
Total	1,656,793	1,369,889	948,461	527,434	668,772	529,601	370,836	550,568	236,921	208,265

^a Harvest confidential when less than three vessels participated.

^b North Mainland and South Mainland catches combined because less than three vessels participated (1993).

^c North Mainland and Westside Section catches combined because less than three vessels participated (1995).

^d Southwest and South Mainland catches combined because less than three vessels participated (1994 & 2000).

^e Westside Section and Northeast Section catches combined because less than three vessels participated (1998).

^f Southwest, North and South Mainland Section catches combined because less than three vessels participated (1999).

^g Southwest and North Mainland Section catches combined because less than three vessels participated (2001).

Table 2-9. Historic commercial red king crab catch and effort for the Kodiak Registration Area "K", 1960-2001.

Fishing Year ^a	Vessels	Landings	Number of Crab	Number of Pounds	Pots Lifted	Average		
						CPUE	Weight Per Crab	Price Per Pound
1960/61	143	NA ^b	2,116,375	21,064,871	NA	NA	NA	\$ 0.09
1961/62	148	NA	3,181,554	28,962,900	NA	NA	NA	0.10
1962/63	195	NA	4,146,143	37,626,703	NA	NA	NA	0.10
1963/64	181	NA	4,158,988	37,716,223	NA	NA	NA	0.10
1964/65	189	NA	4,923,309	41,596,518	95,951	51	NA	0.10
1965/66	175	NA	11,061,709	94,431,026	173,083	64	NA	0.13
1966/67 ^c	213	NA	8,476,299	73,817,779	223,174	38	NA	0.11
1967/68	227	3,847	5,147,321	43,448,492	207,392	25	NA	0.26
1968/69	178	1,839	2,348,950	18,211,485	119,146	20	NA	0.26
1969/70 ^d	136	978	1,606,181	12,200,571	96,841	17	NA	0.28
1970/71	100	830	1,561,318	11,719,970	119,192	13	NA	0.30
1971/72	89	507	1,539,157	10,884,152	66,166	23	NA	0.39
1972/73	88	683	2,029,670	15,479,916	70,806	29	NA	0.55
1973/74	129	837	1,847,679	14,397,287	77,826	24	NA	0.45
1974/75	158	1,195	2,910,201	23,582,720	110,297	26	NA	0.45
1975/76	169	1,569	2,976,909	24,061,651	113,795	26	8.1	0.66
1976/77	195	1,165	2,177,956	17,966,846	130,777	17	8.2	1.37
1977/78	179	1,186	1,590,477	13,503,666	145,867	11	8.5	1.34
1978/79	194	1,077	1,464,021	12,021,850	177,261	8	8.2	1.60
1979/80	247	1,346	1,979,394	14,608,900	207,991	9	7.3	0.95
1980/81	164	1,175	2,787,199	20,448,654	201,531	14	7.3	1.05
1981/82	246	2,214	3,035,674	24,237,601	388,751	8	8.0	2.00
1982/83	309	1,373	1,011,109	8,729,761	283,795	4	8.6	3.75

No commercial fishery has occurred since the 1982/83 season.

AVERAGE ^e	174	1,359	2,963,898	24,834,120	143,813	21		
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^aFishing year defined as May 1 - April 30.

^bNot available.

^cJuly 1 - April 30 season established.

Table 2-10. Kodiak Area red king crab harvest composition and seasons, 1960-2001.

Season	Open	Closed	Catch Million Pounds	Percent Recruits ^a	Percent Post -Recruits	Size Limit (Inches)
1960/61	1-Jul	30-Jun	18.9	8	92	6.5
1961/62	1-Jul	30-Jun	29.0	36	64	6.5
1962/63	1-Jul	30-Jun	37.6	26	74	6.5
1963/64	1-Jul	30-Jun	35.0	33	67	7.0
1964/65	1-Jul	30-Jun	41.6	48	52	7.0
1965/66	1-Jul	30-Apr	94.4	35	65	7.0
1966/67	1-Jul	30-Apr	73.8	28	72	7.0
1967/68	1-Jul	30-Apr	43.4	27	73	7.0
1968/69	15-Jun	31-Mar	18.2	61	39	7.0
1969/70	15-Aug	15-Jan	12.2	59	41	7.0
1970/71	15-Aug	15-Jan	11.7	38	62	7.0
1971/72	15-Aug	29-Oct	10.9	75	25	7.0
1972/73	15-Aug	13-Oct	15.5	47	53	7.0
1973/74	15-Aug	25-Oct	14.4	49	51	7.0
1974/75	15-Aug	21-Sep	20.9	52	48	7.0
1975/76	15-Oct	15-Jan	2.2	3	97	8.0
	15-Aug	20-Oct	21.6	48	52	7.0
	20-Oct	1-Dec	2.5	3	97	8.0
1976/77	1-Sep	16-Oct	14.6	33	67	7.0
	1-Dec	15-Jan	3.1	1	100	8.0
1977/78	15-Sep	30-Nov	11.7	37	63	7.0
	1-Dec	15-Jan	1.8	1	99	8.0
1978/79	10-Sep	30-Nov	10.3	44	56	7.0
	1-Dec	15-Jan	1.7	15	85	7.5
1979/80	10-Sep	30-Nov	13.4	70	30	7.0
	1-Dec	15-Jan	1.2	30	70	7.5
1980/81	15-Sep	30-Nov	18.4	69	31	7.0
	1-Dec	15-Jan	2.1	22	78	7.5
1981/82	15-Sep	15-Dec	20.3	61	39	7.0
	15-Dec	15-Jan	3.9	7	93	7.5
1982/83	1-Sep	10-Dec	7.5	46	54	7.0
	10-Dec	19-Dec	1.2	19	81	7.5
No commercial fishery has occurred since the 1982/83 season.						

^aRecruitment after 1963 based on 7" size limit.

Table 2-11. Historic commercial golden king crab *Lithodes aequispinus* catch and effort for the Kodiak Registration Area "K" 1983-2001.

Fishing Year	Landings	Vessels	No. of Crabs	No. of Pounds	Pots Lifted	Average		Price Per Pound	Exvessel Value (Million Dollars)
						Weight of CPUE	Crab		
1983	36	12	16,349	111,398	8,490	2.0	6.8	3.00	0.3
1984	8	6	3,513	22,066	1,950	2.0	6.3	2.50	0.1
1985	19	4	10,005	63,641	2,693	4.0	6.4	1.95	0.1
1986	31	4	21,862	146,478	5,463	4.0	6.7	3.00	0.4
1987	38	5	9,484	67,191	3,187	3.0	7.1	3.44	0.2
1988					Confidential				
1989					Confidential				
1990	6	3	1,214	7,314	1,090	1.0	6.0	3.00	0.2
1991	0	0	0	0	0	NA	NA	NA	NA
1992					Confidential				
1993					Confidential				
1994	0	0	0	0	0	NA	NA	NA	NA
1995					Confidential				
1996	0	0	0	0	0	NA	NA	NA	NA
1997	0	0	0	0	0	NA	NA	NA	NA
1998	0	0	0	0	0	NA	NA	NA	NA
1999	0	0	0	0	0	NA	NA	NA	NA
2000					Confidential				
2001					Confidential				

Table 2-12. Historic commercial trawl shrimp catch and effort for the Kodiak District of Westward Registration Area "J", 1958-2001.

Calendar Year	Fishing Year	Vessels	Landings	Harvest in Pounds	Price (Dollars)
1958		NA	NA	31,886	\$0.04
1959		NA	NA	2,861,900	\$0.04
1960		11	94	3,197,985	\$0.04
1961		12	203	11,083,500	\$0.04
1962		11	204	12,654,027	\$0.04
1963		NA	NA	10,118,472	\$0.04
1964		6	NA	4,339,114	\$0.04
1965		11	320	13,823,061	\$0.04
1966		17	551	24,097,141	\$0.05
1967		23	NA	38,267,856	\$0.05
1968		16	NA	34,468,713	\$0.04
1969		26	935	41,353,461	\$0.06
1970		18	1,024	62,181,204	\$0.04
1971		49	1,746	82,153,724	\$0.04
1972		63	1,398	58,352,319	\$0.04
1973		50	1,283	70,511,477	\$0.06
	1973/74	63	1,029	56,203,992	\$0.08
	1974/75	75	1,100	58,235,982	\$0.08
	1975/76	58	884	49,086,591	\$0.08
	1976/77	62	762	46,712,083	\$0.10
	1977/78	58	653	26,409,366	\$0.13
	1978/79	50	328	20,506,021	\$0.17
	1979/80	37	242	12,863,536	\$0.23
	1980/81	67	462	27,101,218	\$0.29
	1981/82	55	298	19,112,367	\$0.27
	1982/83	40	224	10,391,207	\$0.27
	1983/84	14	63	2,779,030	\$0.35
	1984/85	13	59	2,942,922	\$0.33
	1985/86	5	26	1,145,980	\$0.20
	1986/87		Confidential		
	1987/88		Confidential		
	1988/89	0	0	0	0
	1989/90	0	0	0	0

-Continued-

Table 2-12 . (page 2 of 2)

Calendar Year	Fishing Year	Vessels	Landings	Harvest in Pounds	Price (Dollars)
	1990/91	0	0	0	0
	1991/92	0	0	0	0
	1992/93	0	0	0	0
	1993/94	3	3	1,704	NA
	1994/95	0	0	0	0
	1995/96	0	0	0	0
	1996/97		Confidential		
	1997/98	4	7	11,905	\$0.22
	1998 to 2001 ^a	4	16	24,309	NA
Averages ^b		33	556	25,917,820	\$0.12

Catch confidential when less than three vessels participated.

^aHarvest combined to protect vessel confidentiality.

^bAverage calculated from years 1960-1985.

Table 2-13. ADF&G shrimp population survey estimates for selected sections of the Kodiak and Chignik Districts, 1995, 1998, and 2001.

Area	MABI ^a	1995 Survey	1998 Survey	2001 Survey
	(millions of pounds)			
Chiniak	1.45	0.17	0.12	0.63
Marmot	29.24	2.84	1.10	5.70
Kiliuda Bay	5.3	0.13	0.15	0.12
Twoheaded Gully	7.3	0.13	0.15	0.12
Alitak Bay	4.28	0.02	0.24	0.51
Uyak Bay	3.19	0.23	0.37	0.76
Uganik Bay	2.59	0.93	0.30	1.57
Wide Bay	1.05	0.08	NA	2.00
Chignik Bay	4.55	1.00	NA	NA
Kuiukta Bay	1.9	0.36	NA	NA

^aMinimum Acceptable Biomass Index (MABI). This is the threshold value needed to conduct a fishery.

Table 2-14. Commercial pot shrimp catch statistics, Kodiak District of Statistical Area 'J', 1969-2001.

Year	Vessels	Landings	Pounds
1969		Confidential	
1970	NA ^a	20	12,302
1971	0	0	0
1972		Confidential	
1973		Confidential	
1974	6	73	10,336
1975	7	77	12,782
1976		Confidential	
1977	3	26	2,565
1978		Confidential	
1979		Confidential	
1980	4	25	4,700
1981	4	6	2,511
1982	6	18	9,754
1983	12	31	18,686
1984	6	21	4,361
1985		Confidential	
1986		Confidential	
1987	0	0	0
1988		Confidential	
1989		Confidential	
1990		Confidential	
1991	0	0	0
1992	0	0	0
1993	0	0	0
1994		Confidential	
1995	0	0	0
1996	0	0	0
1997		Confidential	
1998		Confidential	
1999		Confidential	
2000	4	0	0
2001		Confidential	

Table 2-15. Commercial harvest statistics of red sea cucumbers in the Kodiak and Chignik Districts, 1991-2001.

Year	Number of Dive Permits	Number of Landings	Pounds Harvested	Average Price Per Pound (Dollars)
1991/92		Confidential		
1992/93		Confidential		
1993/94	50	487	564,516	0.93
1994/95	86	269	413,576	1.20
1995/96	21	60	145,092	1.25
1996/97	31	93	162,451	1.25
1997/98	26	65	132,337	1.16
1998/99	16	55	142,313	1.20
1999/2000	19	36	116,134	1.20
2000/01	20	56	116,152	1.50
2001/02	18	73	152,613	1.25

Table 2-16. Red sea cucumber commercial harvest by area, Kodiak and Chignik Districts, 2001.

Area		Guideline Harvest Level	Pounds Harvested
Chignik District Total	Chignik	25,000	0
Kodiak District	Northeast Section	5,000	4,642
	Eastside Section	40,000	43,750
	Southeast Section	30,000	47,046
	Southwest Section	20,000	17,658
	Westside Section	30,000	39,517
	North Mainland Section	5,000	0
	South Mainland Section	5,000	0
	Semidi Island Section	5,000	0
Totals		165,000	152,613

Table 2-17. Historic harvest of green sea urchins in the Kodiak District, 1980-2001.

Year	Number of Permits	Number of Landings	Pounds Harvested (Live Weight)	Average Price Per Pound (Dollars)
1980		Confidential		
1985-1986 ^a	NA	26	45,560	\$0.35
1987	12	78	104,139	0.69
1988	28	260	190,509	0.80
1989	29	81	44,862	0.82
1990	25	83	84,004	0.84
1991	6	24	29,947	0.92
1992-1994 ^a	22	95	73,399	1.15
1995	8	50	38,437	1.34
1996	7	31	36,147	1.10
1997-2000 ^a	11	21	22,850	1.00
2001/02		Confidential		

^a Years combined because less than three processors or divers participated.

Table 2-18. Commercial catch, effort, and value for octopus in the Kodiak Management Area including both state and federal waters, 1977-1984.

Year	Number Vessels	Number Landings	Catch (Pounds)	Average Price per Pound	Exvessel Value (Dollars)
1977	5	9	1,600	0.71	1,136
1978	11	21	3,336	0.75	2,502
1979	20	43	6,978	0.74	5,164
1980	27	61	19,342	0.75	14,507
1981	21	46	5,872	0.70	4,110
1982	12	29	3,854	0.70	2,698
1983	12	20	4,010	0.70	2,807
1984	17	43	6,487	0.70	4,541

Table 2-19. Commercial catch, effort, and value for octopus in the Kodiak Management Area from state and federal waters, 1985-2001.

Year	State-water harvest			Federal-water harvest			Total, state and federal waters			
	Vessels	Landings	Catch (Pounds)	Vessels	Landings	Catch (Pounds)	Vessels ^a	Landings	Catch (Pounds)	Average Price per Pound (Dollars)
1985	6	6	2,229	4	4	2,583	9	10	4,812	0.78
1986			Confidential				5	7	643	0.70
1987			Confidential				7	15	14,151	1.08
1988			Confidential				4	4	1,949	1.08
1989						Confidential				
1990	25	95	55,246	6	45	19,570	22	140	74,816	1.08
1991	57	264	107,030	17	90	27,936	59	354	134,966	1.07
1992	71	227	93,550	26	264	51,343	73	491	144,893	1.07
1993	21	80	92,784	28	69	10,843	41	149	103,627	1.00
1994	15	45	9,129	4	15	1,320	15	60	10,449	0.59
1995	48	361	86,933	16	77	6,031	45	438	92,964	0.58
1996	40	218	63,117	8	90	29,140	27	308	92,257	0.55
1997	66	538	198,014	35	153	40,940	65	691	238,954	0.55
1998	56	427	216,640	46	290	115,295	66	717	331,935	0.45
1999	51	336	172,869	39	178	58,091	77	514	230,960	0.40
2000	55	298	115,295	55	257	66,698	57	460	181,993	0.50
2001	28	258	99,671	38	156	14,606	31	414	114,277	0.38

^a Some vessels made landings from both state and federal waters.

Table 2-20. Razor clam commercial catch, effort and value in the Kodiak Management Area, 1960-2001.

Year	Number of Registered Diggers ^a	Number of Landings	Catch (Pounds)	Average Catch Per Landing (Pounds)	Average Price Per Pound (Dollars)	Est. Price Exvessel (Dollars)
1960	76	NA	420,636	NA	\$0.11	44,000
1961	95	NA	381,971	NA	\$0.11	40,000
1962	66	NA	297,516	NA	\$0.11	31,000
1963	39	NA	323,757	NA	\$0.11	35,600
1964	2	NA	0	NA	\$0.00	0
1965	4	NA	20,000	NA	\$0.25	5,000
1966	29	NA	15,429	NA	\$0.38	6,000
1967	9	NA	2,155	NA	\$0.40	900
1968	19	NA	6,384	NA	\$0.40	2,600
1969	5	6	12,029	2,005	\$0.40	4,812
1970	6	32	132,261	4,133	\$0.40	53,000
1971	73	82	190,394	2,322	\$0.30	57,000
1972	95	128	152,116	1,188	\$0.35	53,000
1973	64	140	165,282	1,181	\$0.40	66,000
1974	58	74	198,381	2,681	\$0.50	99,000
1975	18	5	6,188	1,238	\$0.50	3,000
1976	9	0	0	0	\$0.00	0
1977			Confidential			
1978			Confidential			
1979	0	0	0	0	\$0.00	0
1980	NA	8	8,006	1,001	\$0.79	6,325
1981	NA	5	8,186 ^b	1,637	\$1.00	8,186
1982	NA	11	11,608 ^c	1,055	\$1.00	11,608
1983	NA	7	7,920	1,131	\$1.00	7,920
1984	NA	21	33,972	1,613	\$1.00	33,972
1985	NA	11	16,945 ^d	1,540	\$1.00	16,945
1986	NA	4	3,993	998	\$1.00	3,993
No commercial harvest has occurred since 1986						

^a Represents registered diggers not actual diggers. No data available after 1977 due to statewide issuance of Interim Use Permits.

^b Additional 1,985 pounds of hardshell clams harvested.

^c Additional 1,506 pounds of hardshell clams harvested.

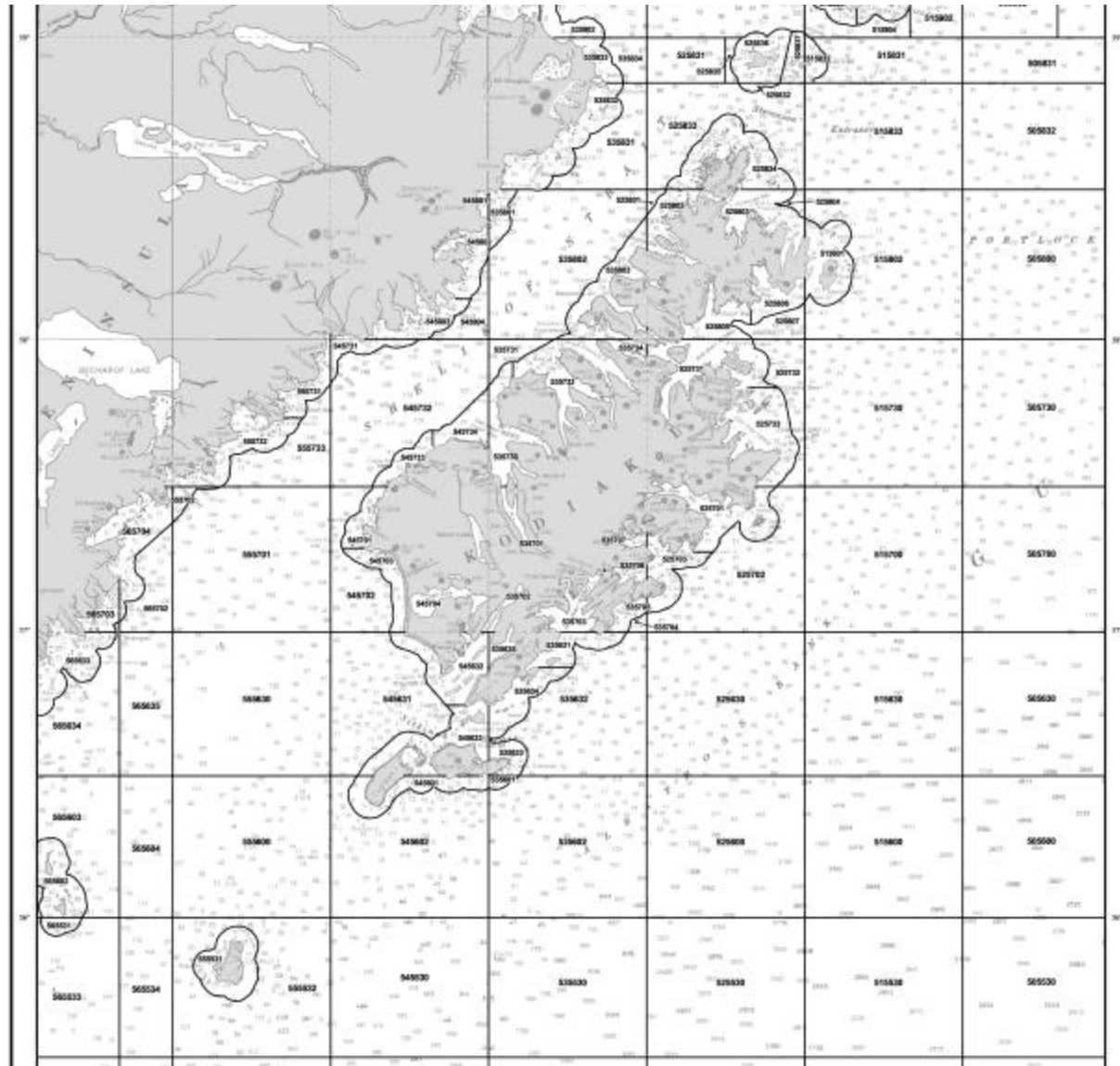


Figure 2-1. ADF&G statistical areas for shellfish fishery management in the Kodiak Island area.

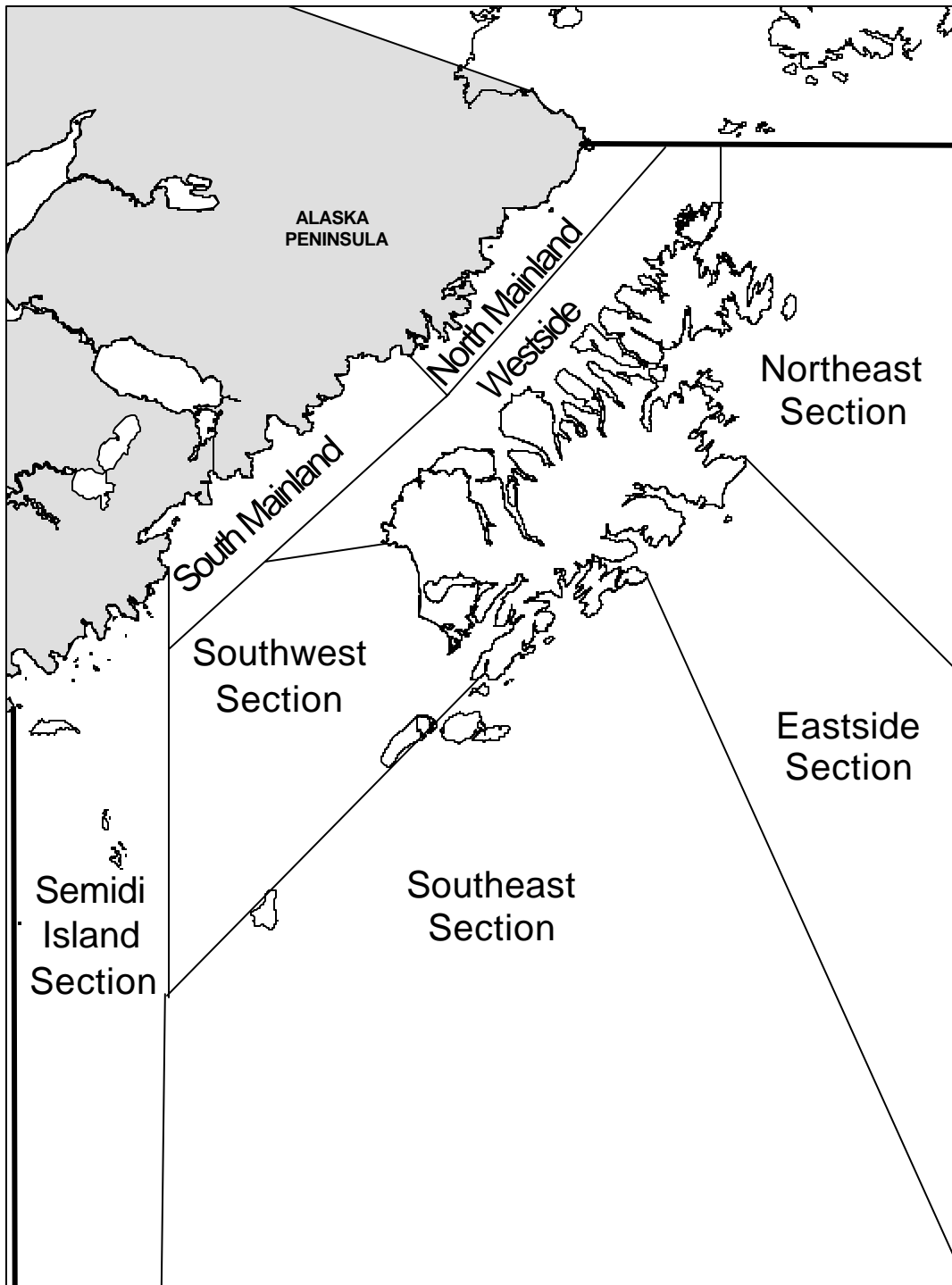


Figure 2-2. The Kodiak District Tanner crab and sea cucumber fishing sections, 2001.

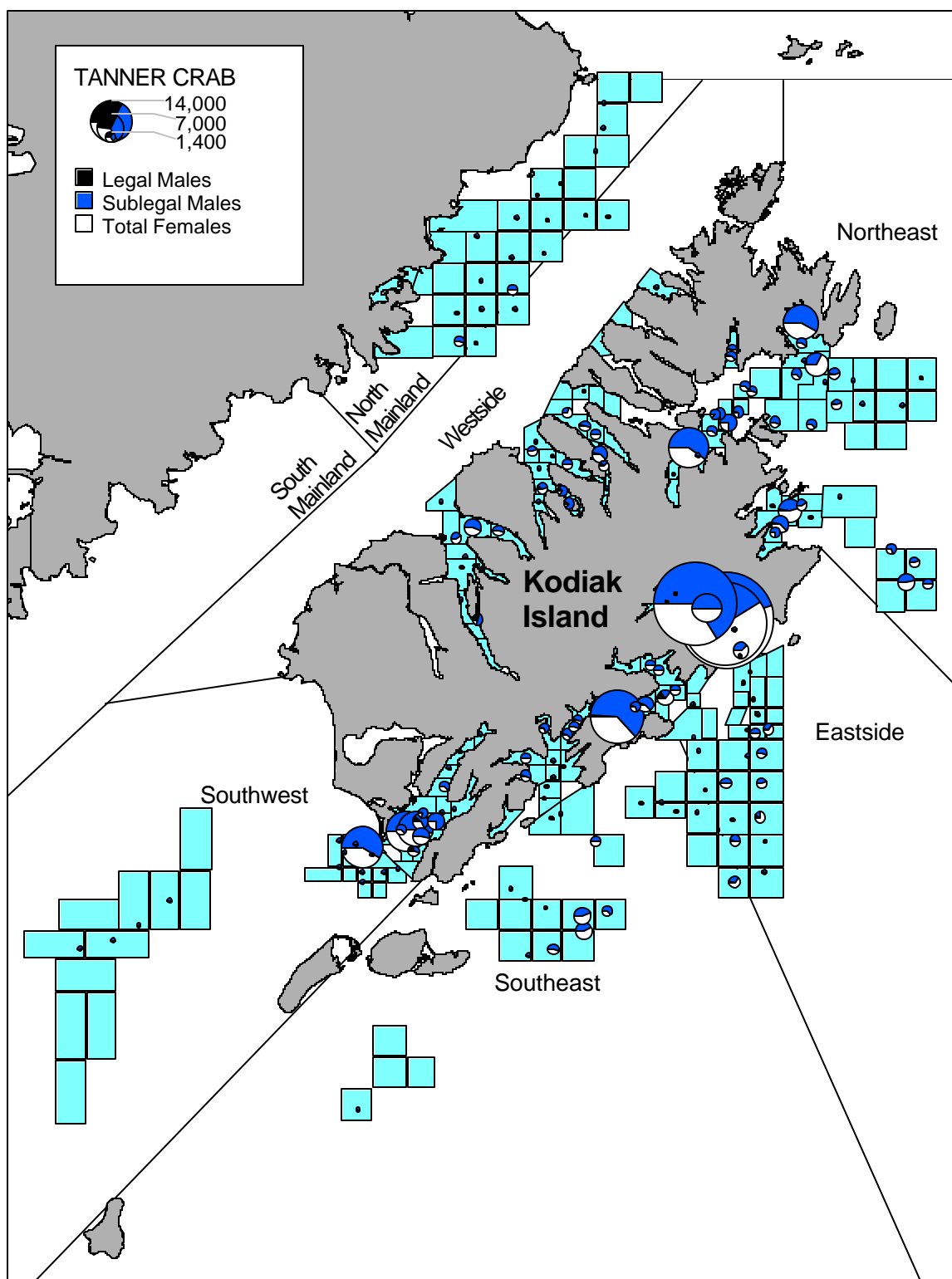


Figure 2-3. Number of Tanner crabs per kilometer towed in the 2001 Kodiak trawl survey.

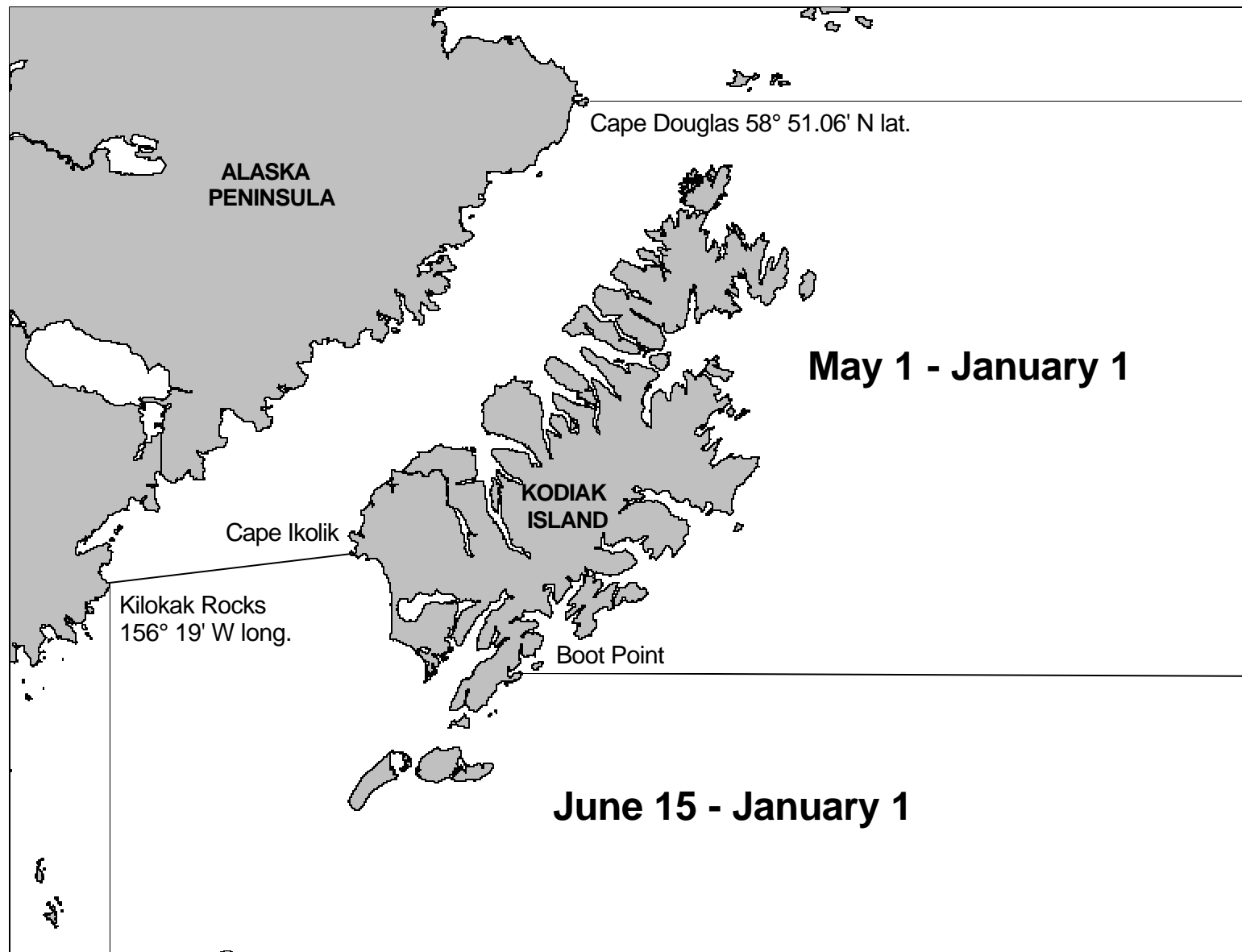


Figure 2-4. Kodiak District commercial Dungeness crab fishing seasons.

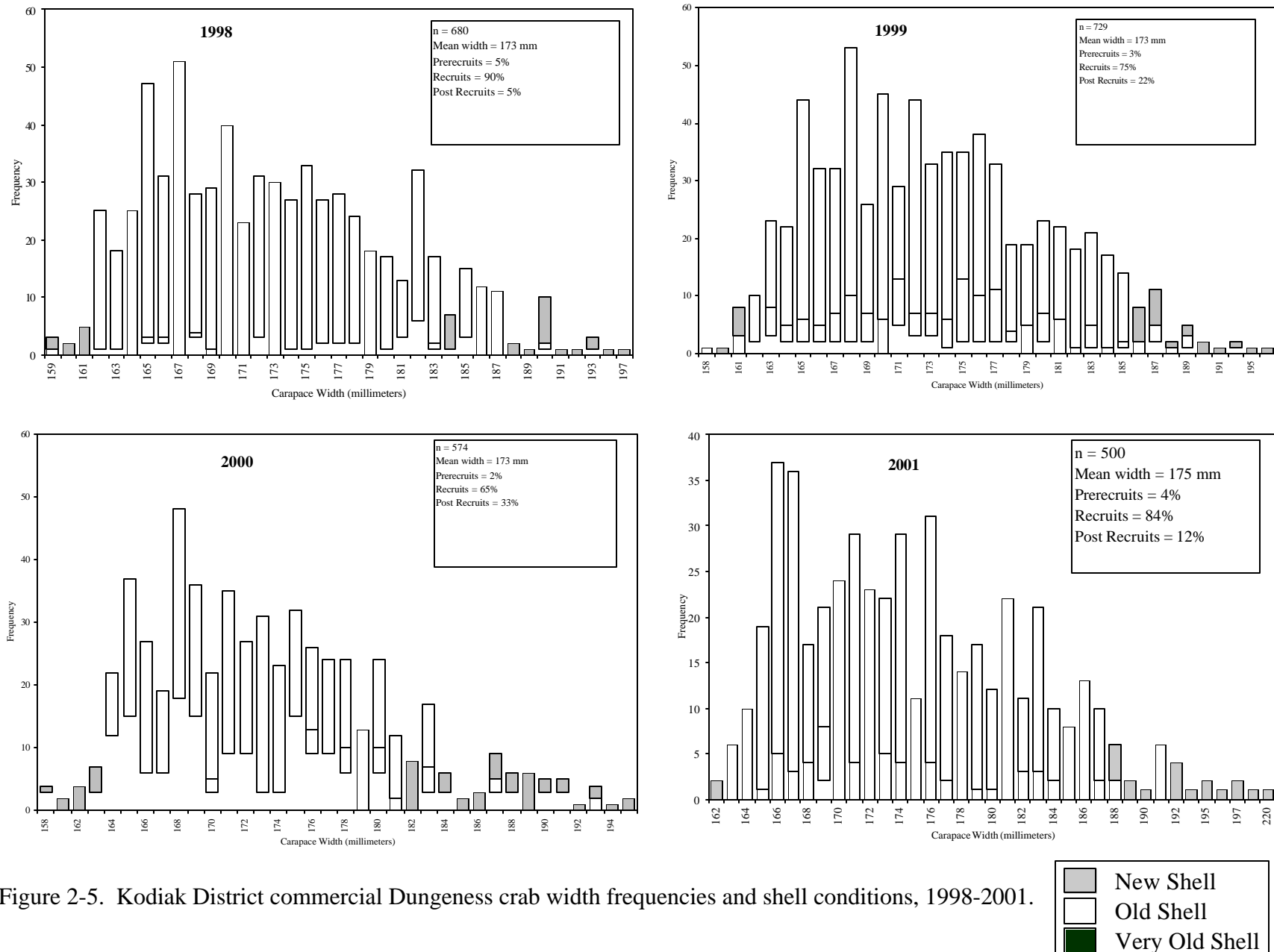


Figure 2-5. Kodiak District commercial Dungeness crab width frequencies and shell conditions, 1998-2001.

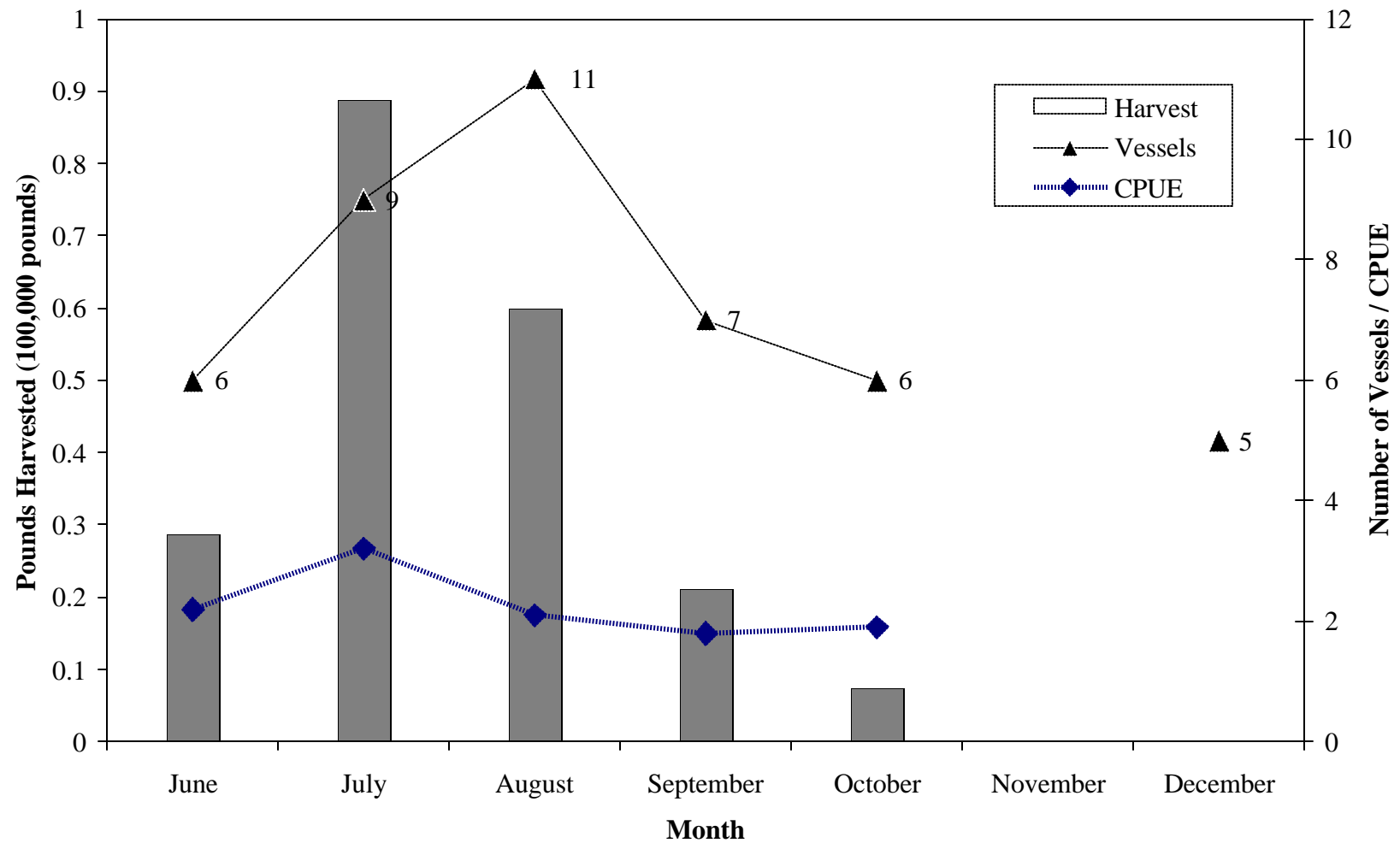


Figure 2-6. Kodiak District commercial Dungeness harvest and vessels participating by month, 2001.
Harvest from May and November not shown because less than three vessels participated.

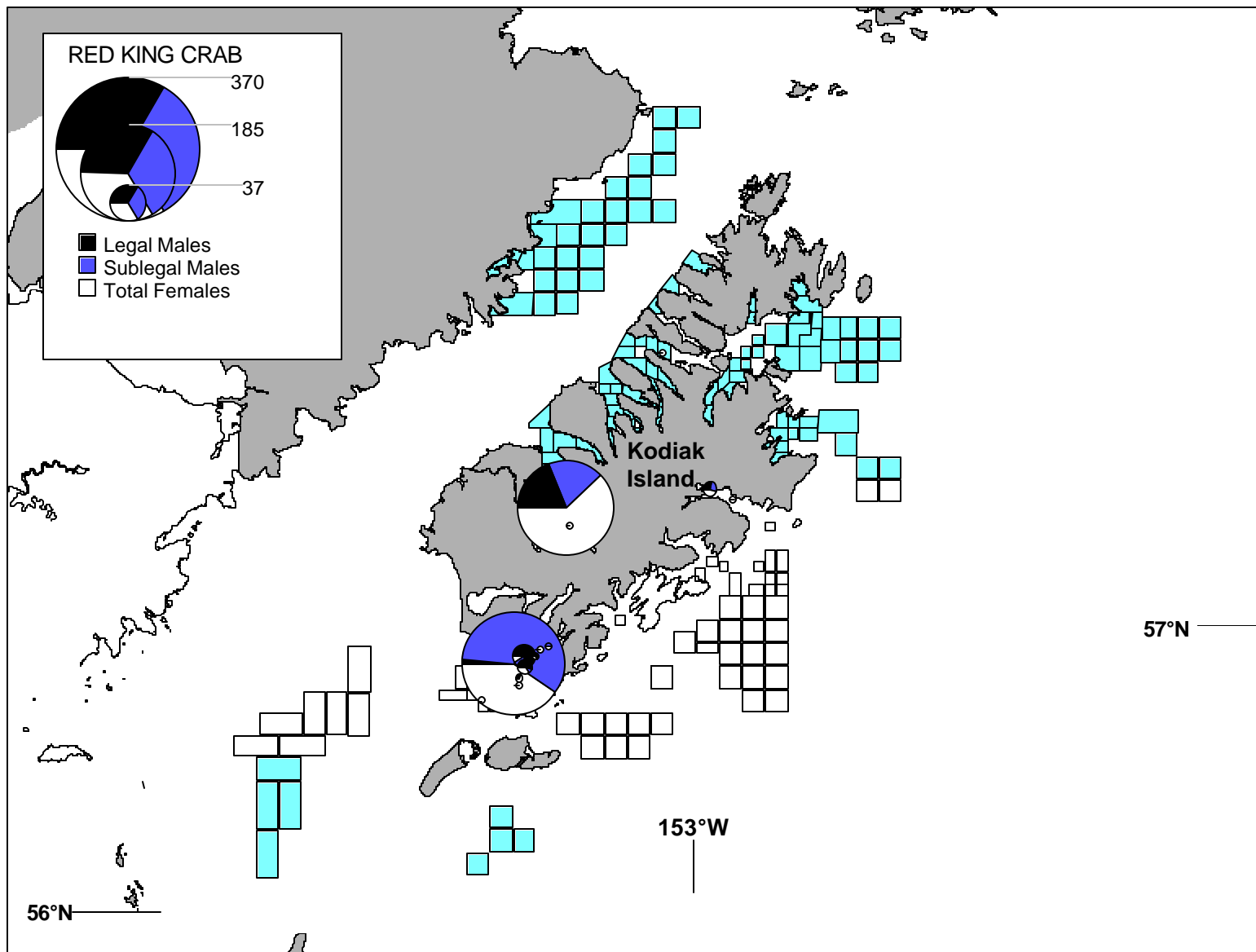


Figure 2-7. Number of red king crabs per kilometer towed in the 2001 Kodiak trawl survey.

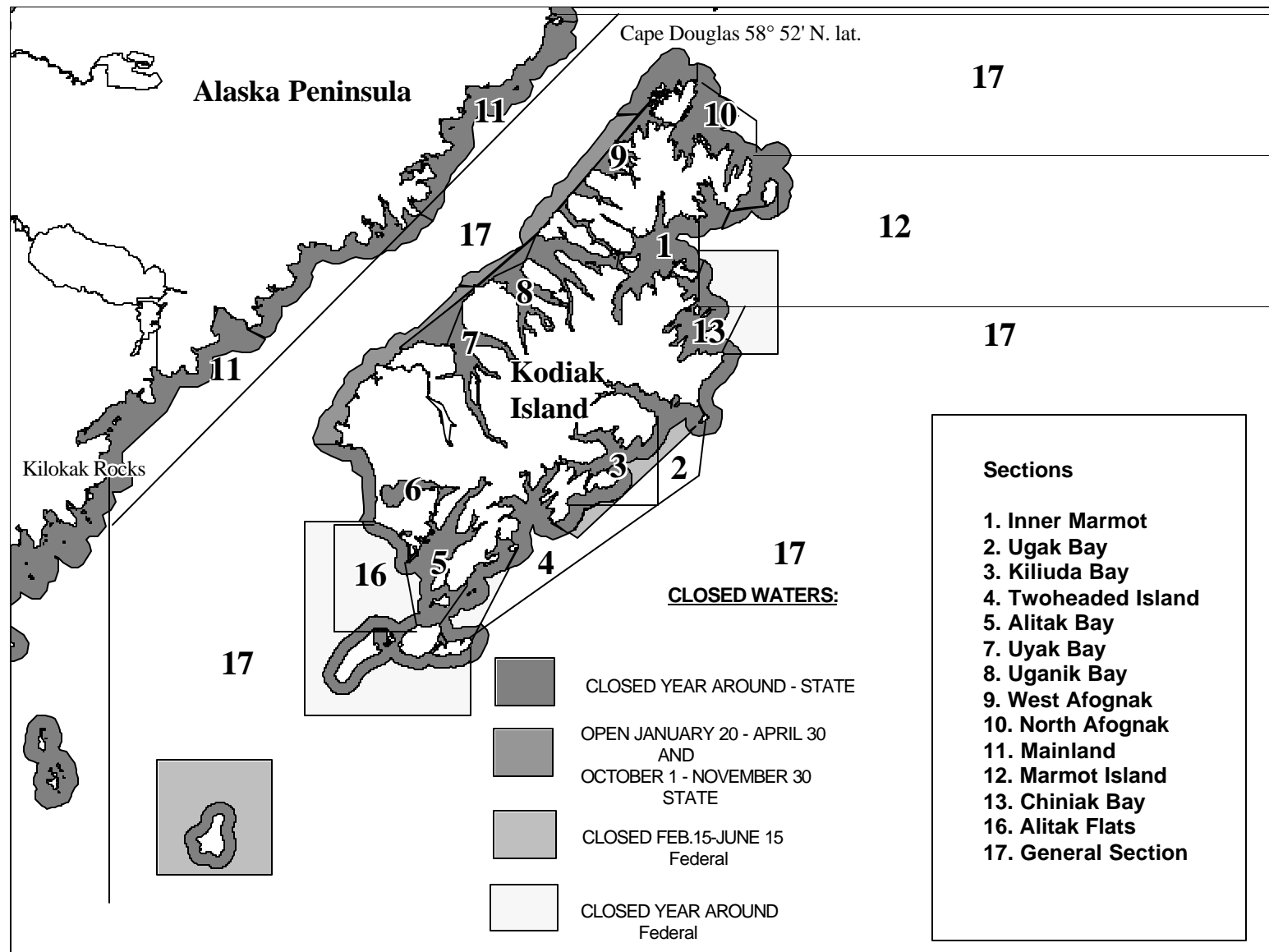


Figure 2-8. Kodiak District trawl shrimp fishing sections and areas closed to non-pelagic trawling.

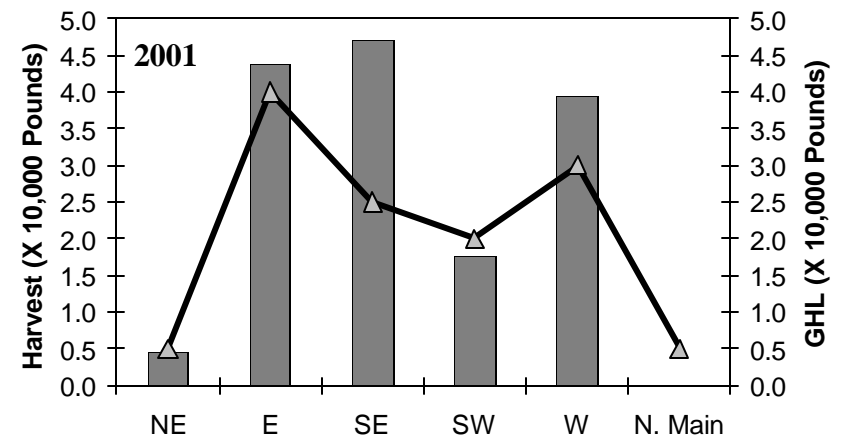
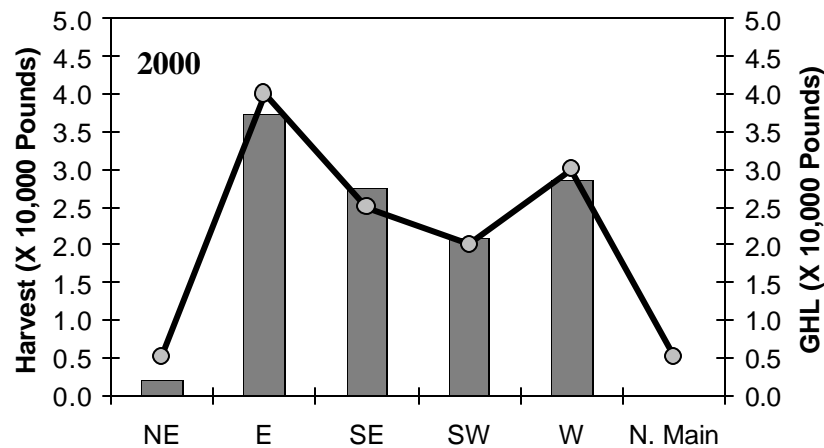
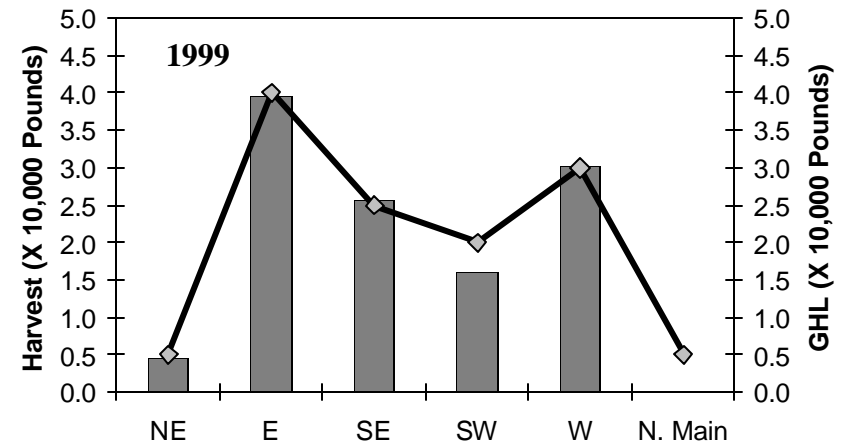
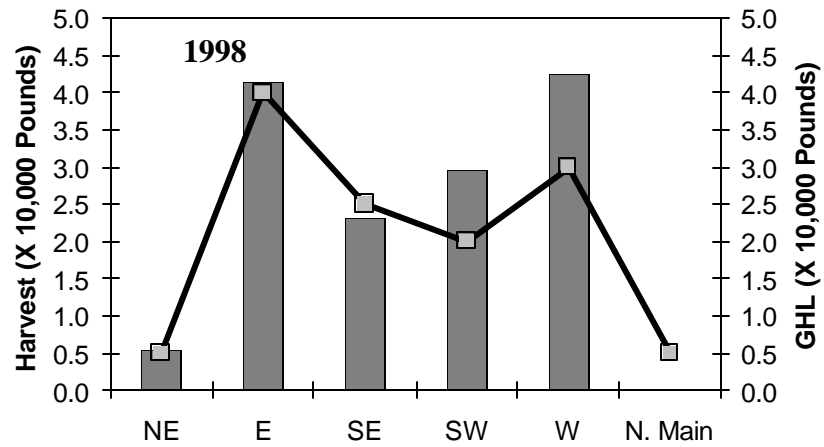




Figure 2-9. Kodiak Section sea cucumber harvests and guideline harvest levels (GHLs), 1998-2001.

Legend  = Harvest (Pounds)  = Guideline Harvest Level (Pounds)

ANNUAL MANAGEMENT REPORT
FOR THE COMMERCIAL SHELLFISH FISHERIES OF THE
ALASKA PENINSULA MANAGEMENT AREA, 2001

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ALASKA PENINSULA

Introduction

The Alaska Peninsula Management Area includes waters of the territorial sea and EEZ of the Pacific Ocean west of the longitude of Cape Kumlik (157°27' W long.) and east of the longitude of Scotch Cap Light (164°44' W long.) (Figure 3-1). The area varies slightly for shrimp and Dungeness crab where the eastern boundary is Kilokak Rocks (156° 20.22' W long.). Additionally, the area is divided into sections and districts of varying boundaries depending on the fishery.

Commercial shellfish fisheries have occurred in the Alaska Peninsula Area for red king crab *Paralithodes camtschaticus*, Tanner crab *Chionoecetes bairdi*, grooved Tanner crab *Chionoecetes tanneri*, Dungeness crab *Cancer magister*, various pandalid shrimp, weathervane scallops *Patinopecten caurinus*, red sea cucumbers *Parastichopus californicus*, and giant Pacific octopus *Octopus dofleini*. Shellfish stocks are depressed for most species within the management area. No commercial fishery for king crab or shrimp has occurred since 1982. The weathervane scallop fishery was closed for the 2001 season. This closure was based on declining fishery performance from the commercial fisheries in 1999 and 2000. Effort occurred in 2001 for Tanner crab, Dungeness crab, and octopus. The 2001 Tanner crab fishery was the first commercial fishery since 1989. Table 3-1 contains information on the number of pounds and exvessel fishery value for the 2001 shellfish fisheries of the Alaska Peninsula Area. Bristol Bay red king crabs and Bering Sea snow crabs *Chionoecetes opilio* were landed in King Cove during 2001. However, because only one processor was involved, information on these landings will be combined with all data and reported in the appropriate Bering Sea section found later in this report.

There were four emergency orders issued in 2001 that pertained to shellfish fisheries in the Alaska Peninsula Area (Table 3-2).

KING CRAB

Introduction

The Alaska Peninsula King Crab Registration Area 'M' includes the Pacific Ocean waters south of the Alaska Peninsula between the longitude of Cape Kumlik (157°27' W long.) and the longitude of Scotch Cap Light (164°44' W long.). Area M is further divided into the Unimak Bight, Central, and West Chignik Districts (Figure 3-1). The Alaska Peninsula Area is a superexclusive registration area for king crab.

Red King Crab

Historic Background

The red king crab fishery in Area M began in 1947, when 141,000 pounds were landed. The largest historic catch of 22.6 million pounds occurred in 1966 (Table 3-3). Throughout the 1970s and early 1980s, most of the harvest occurred in the Central District with Pavlof Bay being the most productive area. The annual catch in the Unimak Bight District during the same period averaged less than half the annual harvest taken from the Central District. Catches in the West Chignik District during this period varied depending on effort, but annually did not exceed 386,000 pounds.

During the 1980/81 season, the Area M harvest totaled just over five million pounds, the highest catch since the 1968/69 season. The catch was the result of strong recruitment from 1978 through 1980. Recruitment of young crabs to legal size has declined severely since that time, resulting in a closure of the fishery since the 1983/84 season.

Stock Status

The Alaska Department of Fish and Game has annually conducted a trawl survey of the Alaska Peninsula crab stocks since 1988 with the R/V Resolution. The 2001 survey consisted of 130 tows in king crab habitat throughout the registration area (Figure 3-2). Data from the survey indicate the red king crab population remains at very low levels though animals were captured in almost every major bay in the area. The estimated population from the 2001 survey was 43,509 crabs, down from the estimated 133,521 crabs from the 2000 survey. As has been the case with previous surveys in the Alaska Peninsula Area, wide ranges of sizes in both sexes were captured.

Golden King Crab

Historic Background

On occasion, fishermen have expressed an interest in exploring Area M for golden or brown king crab. In 1983, five vessels registered but no catch was landed. Presently, male golden king crab 6-inches or greater in shell width may be taken from January 1 through December 31 under a permit issued by the commissioner. No vessels registered to fish for golden king crab in Area M during 2001.

Stock Status

ADF&G does not assess golden king crab stocks in the Alaska Peninsula Area. Exploratory efforts by commercial fishermen have yet to locate quantities sufficient to sustain a commercial fishery in the Alaska Peninsula Area.

TANNER CRAB

Introduction

The waters south of the Alaska Peninsula are part of Tanner crab Registration Area J and are designated as the Chignik and South Peninsula Districts (Figure 3-3). The east boundary of the Chignik District is the longitude of Cape Kumlik (157°27' W long.) and the west boundary is Kupreanof Point (55° 34' N lat. 159° 36' W long.). The South Peninsula District has its eastern boundary at Kupreanof Point and its western boundary at the longitude of Scotch Cap Light (164°44' W long.). BOF regulations set the Chignik and South Peninsula Districts as nonexclusive registration districts for Tanner crab. No vessel may participate in more than one Tanner crab district at a time and vessels longer than 58' length overall may not be used to take Tanner crab in the Chignik or South Peninsula Districts.

Chignik District Tanner Crab

Historic Background

The Chignik Tanner crab fishery began in 1968 when 21,100 pounds were harvested (Table 3-4). Thirty-five vessels participated in the 1975/76 season with landings reaching a peak harvest of approximately 7 million pounds. Three other points characterized the first 14 years of the Chignik District fishery. First, the productive grounds included nearly all waters of the district with highest catches offshore between Mitrofanina Island, Lighthouse Rocks, and the Semidi Islands. Second, most of the effort occurred in late March after the Kodiak and South Peninsula District fisheries closed. Third, no abundance surveys were conducted during this period.

ADF&G conducted trawl surveys each summer from 1981 to 1984, which predicted poor recruitment following the 1983 fishing season. As predicted from survey data, commercial fishing success and harvest dropped sharply each season from 1984 to 1986. The catch did not decline uniformly over the entire district, but fell off first and most rapidly in the popular offshore waters. Production from offshore waters decreased steadily until the harvest was limited to Chignik Bay and a few other near shore areas in 1988. Concurrent with dwindling catches, fleet size decreased from 48 vessels in 1983 to 6 vessels in 1988. Since 1990, the Chignik District fishery has remained closed due to low abundance of Tanner crabs in the area.

In 1999, ADF&G presented the BOF with a comprehensive Tanner crab harvest strategy for the Chignik District. The harvest strategy established thresholds of abundance that must be met, based on preseason survey population estimates, and a minimum GHL to allow for a commercial Tanner crab fishery (Urban et al. 1999). The harvest strategy requires additional criteria to be in place for an opening of commercial Tanner crab in the Chignik or South Peninsula Districts. Other management measures, largely the product of public input at the BOF meeting, resulted in a revised pot limit of 30 for the Chignik District regardless of the GHL. In addition, the South Peninsula District must also open for a fishery to occur in the Chignik District. The harvest strategy, as adopted by the BOF, can be found under 5 AAC 35.507 KODIAK, CHIGNIK, SOUTH PENINSULA DISTRICTS, *C bairdi* TANNER CRAB HARVEST STRATEGIES in the shellfish regulations.

The 2000 Tanner crab population estimates were at the highest level since the trawl survey time series began in the late 1980s. The 2000 estimate of mature male Tanner crabs in the Chignik District was above the threshold of one-half the average long-term abundance. However, the Chignik District did not meet the minimum GHLL requirements of 200,000 pounds specified in the harvest strategy. Therefore, the Chignik District did not open to commercial Tanner crab fishing in 2001.

Stock Status

The 2001 trawl survey estimate of mature male abundance was slightly below the regulatory threshold of 973,000 animals. The estimated mature male abundance was 954,135 animals. Therefore, no commercial fishery was allowed in the Chignik District in 2002 (Table 3-5).

The Chignik District estimate of all sizes and sex of crabs increased from 11.3 million crabs in 2000 to 12.7 million in 2001. A large component of the 2001 estimate was male crabs smaller than 70-mm carapace width. Total legal-sized crabs in the Chignik District decreased from an estimated 600,000 animals to 375,000 animals. Given the large component of the population estimate composed of animals smaller than 70 mm, future recruitment may improve in the Chignik District.

South Peninsula District Tanner Crab

Introduction

The South Peninsula District of Area J for Tanner crab (Figure 3-3) includes all waters south of the Alaska Peninsula and west of the line from Kupreanof Point (55°34' N lat., 159°36' W long.) to the easternmost point of Castle Rock (55°16.51' N lat., 159°29'59 W long.) then extending 135° southeast from the easternmost point of Castle Rock and east of the longitude of Scotch Cap Light (164°44' W long.).

Historic Background

The first harvest of Tanner crab from the area occurred in 1967 when 3,100 pounds were landed (Table 3-6). The fishery grew quickly and, by 1973, the harvest exceeded five million pounds. GHLLs were established in 1974. In 1975, seasons were imposed to protect adult crab during the mating and molting period. In 1976, the minimum size limit of 5.5" CW was established. During the six fishing seasons from 1974 through 1978/79, harvests ranged from 5 to 9 million pounds. The fishery peaked in 1978/79 when 9 million pounds of Tanner crab were caught. From 1979 to 1984, the harvest and CPUE declined as a result of low recruitment and in the 1984 season the fleet only landed two million pounds. Recruitment improved in the years 1985 through 1988 and the harvest ranged from two million to 3.8 million pounds. The harvest decreased to 1 million pounds in 1989 and indications from the ADF&G trawl survey predicted a decline in recruitment for future years. The fishery has been closed from 1990 to 2000 due to the low abundance of legal-sized crab and the lack of recruitment.

In 1999, ADF&G presented the BOF with a comprehensive harvest strategy for Tanner crab in the South Peninsula District. The harvest strategy established a threshold of abundance that must be met, based on preseason survey estimates, to allow for a commercial Tanner crab fishery (Urban et

al. 1999). The harvest strategy requires additional criteria to be in place for an opening of the commercial Tanner crab fishery in the South Peninsula District. Largely due to public input at the BOF meeting, a stair-step pot limit for the South Peninsula Area of 30, 40, or 75 pots per vessel depending on GHL size was adopted. The harvest strategy, as adopted by the BOF, can be found under 5 AAC 35.507 KODIAK, CHIGNIK, SOUTH PENINSULA DISTRICTS, *C bairdi* TANNER CRAB HARVEST STRATEGIES in the shellfish regulations.

The 2000 Tanner crab population estimates were at the highest level since the trawl survey time series began in the late 1980s. The estimated number of mature male Tanner crabs in the South Peninsula District was above one-half the threshold value of the average long-term abundance for the second year in a row. The district also met the remaining regulatory benchmarks for a commercial fishery; therefore, an opening was scheduled for 2001.

2001 South Alaska Peninsula Fishery.

The 2001 South Peninsula District Tanner crab fishery opened at 12:00 noon on January 15. This was the first Tanner crab fishery in South Peninsula District since 1989. A 375,000 pound guideline harvest level (GHL) was established for the district; under the regulatory harvest strategy. The pot limit for the GHL was 30 pots per vessel. Fifty-six vessels registered 1,648 pots for the fishery. One vessel did not participate. To ensure manageability of the fishery, daily 12-hour fishing periods, from 8:00 AM to 7:59 PM, were established by emergency order (Table 3-2).

The 2001 fishery was managed inseason by voluntary catch reports submitted by participants. Participation in the inseason reporting fluctuated widely and no more than 50% of the fleet reported on any given day.

The fishery closed on January 18, 2001 at 7:59 PM after four fishing periods (44 hours of actual fishing time). Projected harvest from voluntary inseason reports from approximately 50% of the fleet indicated the 375,000-pound GHL to be fully attained at the time of closure. Actual harvest, however, was lower than projected. The harvest for the 2001 fishery was 258,631 pounds from 91 landings.

Many of the vessels that did not submit inseason reports and were assumed by ADF&G staff to be performing near the fleet average for pots lifted and daily reported CPUE were actually below the averages. Seventeen deliveries occurred where the season harvest was below 1,500 pounds. Nine of those deliveries were less than 500 pounds each. Few if any of these vessels with very low season harvest totals participated in the inseason reporting and would have influenced the daily projections had they reported. Weather was a significant factor during the fishery as well. Many vessels reported being unable to work on some days or being restricted to working in protected areas.

The majority of fishing effort occurred in Leonard's Harbor adjacent to Cold Bay and in the Ikatan/Morzhovi Bay area. Some effort also occurred in Pavlof and Canoe Bays and adjacent to Popov and Nagai Islands.

Dockside samplers at shore-based processors and an onboard observer aboard the sole floating processor conducted 52 confidential interviews. Ninety-one landings were made for the 2001

South Peninsula District Tanner crab fishery, 44% of these were sampled. The average weight was calculated to be 2.34 pounds. Weights ranged from 2.25 pounds to 2.70 pounds per crab.

Processors paid \$1.60 per pound for crab designated as 'clean'; crabs designated as 'dirty' or 'c-grade' were purchased for \$0.40 per pound. Penalties were imposed on vessels that delivered above a specified percentage of dirty or c-grade crabs resulting in some entire loads being purchased for \$0.40 per pound. Fish ticket data shows that an average of \$0.80 per pound was paid for deliveries. Estimated exvessel value for the fishery is \$320,000.

Several operators reported fishing on average CPUE in excess of 100 crabs but retained only 30 to 40 crabs to ensure that their loads were not docked for high percentages of dirty crabs. Processors reported that both grades of crabs had good meat infill but that the clean crab had a darker shell than desired for their established markets.

Stock Status

The 2001 estimated mature male abundance for the South Peninsula District fell below the established regulatory threshold. The estimated abundance was 1,213,607 mature males and the threshold is established at 1,375,000 animals (Table 3-5). Consequently, a commercial fishery was not held in the South Peninsula District in January 2002.

The overall total population estimate was 14.3 million animals, up from the 2000 estimate of 13.2 million. The legal-sized population estimate in the district was 497,000 animals; a significant decrease from the 2000 estimate of 873,000 animals. Morzhovoi and Cold Bays showed the highest densities of legal Tanner crab in the South Peninsula District (Figure 3-4). As was the case in all survey areas, the majority of the estimated population is less than 70 mm in carapace width. However, the number of animals 92-114 mm decreased from the 2000 estimate. This indicates that it may be a few years before sufficient number of mature males exist for a commercial fishery opening to resume.

Deep Water Tanner Crab

Historic Background

The Alaska Peninsula was initially explored for commercial fishing on grooved Tanner crabs *Chionoecetes tanneri* and, to some extent, triangle Tanner crabs *C. angulatus* in 1994. Both species are found along the continental shelf break at great depths, with commercial fishing often occurring between 325 and 475 fathoms. The commercial fishery was permitted under the terms of 5 AAC 35.511 PERMITS FOR *TANNERI* AND *ANGULATUS* TANNER CRAB IN AREA J. Vessels were required to use single line pot gear and carry ADF&G approved observers. A minimum legal size of 5.0 inches CW for *C. tanneri* and 4.5 inches for *C. angulatus* was stipulated by commissioners permit. Two vessels fished in the Alaska Peninsula District during 1994 and their harvest remains confidential.

Interest in the deep water Tanner crab fishery increased in 1995. Six vessels made landings totaling 947,014 pounds (Table 3-7). Grooved Tanner crabs comprised the vast majority of deep water Tanner catch retained. The average catch per pot was 81 crabs with an average weight of 1.6 pounds. Average size of retained crabs was 133 mm in carapace width.

Performance of the fishery declined in 1996. Seven vessels made 35 deliveries, but the catch fell to 553,028 pounds and CPUE declined to 17 crabs per pot. The price also fell from an average of \$1.40 to \$1.00 per pound. Much of the fishery production came from previously unexplored areas.

New regulations passed by the BOF became effective in 1996. These regulations contained provisions allowing for the longlining of pots and established pot limits. Alaska Peninsula fishermen were allowed up to 300 small pots, defined as those no more than 20 feet in perimeter and no more than 42 inches high or 150 large pots.

ADF&G established conservative guideline harvest levels (GHLs) in February 1997. The Alaska Peninsula District GHL was established at 200,000 pounds. Additional requirements for testing escape mechanisms to lessen the amount of crab handled and discarded at sea were added to the conditions of the deep water Tanner permit. Given the reductions in GHLs, introduction of pot limits, declining CPUE, and the fall in market price for crab, no vessels registered for the harvest of deep water Tanner crabs during 1997 to 1999. One vessel participated in 2000, however the harvest remains confidential.

2001 Fishery

No vessels fished for deepwater Tanner crabs in the Alaska Peninsula Area in 2001. Historic harvest information from the district is shown in Table 3-7.

Stock Status

Information on the biology of deep water Tanner crabs is limited. Data still needs to be collected on size at maturity, handling morality, molt timing, and other important biological parameters. The department does not conduct population assessments. As a condition of the operating permits, deep water Tanner vessels are required to carry onboard observers who are working to collect this information.

ALASKA PENINSULA DUNGENESS CRAB

Introduction

The Alaska Peninsula District for Dungeness crab (Figure 3-5) includes all waters of Registration Area J west of a line at 135° off Kupreanof Point and east of the longitude of Scotch Cap Light (164°44' W long.). Prior to 2001, the Chignik District was a part of the Alaska Peninsula District. This district was designated superexclusive for Dungeness crab in 1983.

Historic Background

Historically, Dungeness crab catches from the district have been sporadic, with the highest catch recorded in 1968 when 1.26 million pounds were landed (Table 3-8). Subsequent effort and harvest

remained low for many years due to low prices and better prospects in other fisheries. During the early 1980s, the decline in king crab stocks and a stronger market for Dungeness crabs generated renewed interest in the fishery. As a result, local fishermen became concerned with over exploitation of the stock. In response, the BOF specified the Alaska Peninsula District as a superexclusive registration area in 1983. The superexclusive designation has reduced effort in the district and recent poor catches have discouraged participation in the fishery. District boundaries were changed in 2001 moving the eastern boundary from Cape Kumlik to Kupreanof Point.

Management of the Alaska Peninsula District Dungeness fishery has been achieved by '3-S management wherein the sex, size and season are regulated. Only males greater than 6.5 inches in carapace width may be harvested from May 1 through December 31.

Alaska Peninsula District 2001 Fishery

The 2001 Alaska Peninsula Dungeness crab season opened May 1. Three vessels were registered to fish. One vessel reported catches, however fish tickets were not submitted. An investigation is occurring at this time as to the disposition of that product. The two remaining vessels did not participate.

Chignik District 2001 Fishery

The Chignik District during 2001 was managed separately from the Alaska Peninsula District for the first time. In 2000, the Board of Fisheries created a separate registration district and designated it superexclusive. The Chignik District consisted of waters east of Kupreanof Point and west of Kilokak Rocks along the south side of the Alaska Peninsula. Parts of this district were previously included in both the Kodiak and Alaska Peninsula Districts. One vessel registered for the Chignik District and made one landing. The catch information remains confidential (Table 3-8).

Stock Status

No stock assessments have been conducted for the Dungeness crab in the Alaska Peninsula or Chignik Districts. Department activity has been limited to monitoring commercial fishery deliveries, conducting vessel operator interviews, and recording the harvest. Given the few deliveries available for sampling and the scant anecdotal information from vessel operator interviews, no definitive conclusions can be readily drawn concerning the status of the Alaska Peninsula or Chignik Dungeness crab stocks.

ALASKA PENINSULA SHRIMP

Introduction

The Alaska Peninsula shrimp fishery is divided into the Chignik and South Peninsula Districts (Figure 3-6). The Chignik District contains all waters south of the Alaska Peninsula between the

longitude of Kilokak Rocks (156° 20.22' W long.) and a line from Kupreanof Point (55°33.98' N lat., 159° 35.88' W long.) to the easternmost point of Castle Rock (55° 16.51' N lat., 159° 29'59 W long.) and east of a line extending 135° southeast from the easternmost point of Castle Rock. The South Peninsula District is comprised of all waters south of the Alaska Peninsula and west of a line from Kupreanof Point to Castle Rock that extends 135° southeast from the easternmost point of Castle Rock and east of the longitude of Cape Sarichef (164°55' W long.). Both districts are subdivided into sections that are managed according to 5 AAC 31.590 WESTWARD AREA SHRIMP FISHERIES MANAGEMENT PLAN.

Historic Background

Shrimp fishing in the Alaska Peninsula and Chignik Districts began in 1968, but catch levels remained relatively low until the 1972/73 season when 19.5 million pounds were harvested (Table 3-9). The historic high catch was reached in the 1977/78 season harvest of 71.5 million pounds from the two districts. Catches declined rapidly until all Alaska Peninsula sections were closed in 1980/81. Although the Sutwik Island Section and all offshore waters of the Chignik District remained open in 1981/82, only 70,948 pounds of shrimp were landed from those areas. Since that time, all the inshore waters have remained closed and no fishing has occurred in the open area offshore. No vessels were registered for the offshore sections that were open to fishing during the 2001/02 season.

Stock Status

ADF&G last conducted a trawl survey in the Chignik Bay and Kuiukta Bay Sections of the Chignik District in 1995. Thirteen tows in the Chignik District averaged 146 pounds of shrimp per nautical mile towed, down from the 246 pounds per nautical mile captured during the 1992 survey. The 1995 Chignik District population estimate was 1.4 million pounds, well below the 4.55 million pounds minimum acceptable biomass index (MABI) needed to open the commercial fishery. The next ADF&G shrimp survey is scheduled for September 2002.

SOUTH PENINSULA SEA CUCUMBERS

Introduction

The districts in use for Tanner crab management are also used to delineate sea cucumber management districts. Fisheries for sea cucumbers in the Westward Region are nonexclusive.

Historic Background

The waters adjacent to the south side of the Alaska Peninsula were initially explored for commercial fishing on the red sea cucumber *Parastichopus californicus* in 1993. The majority of dive effort occurred in the Chignik District, with the farthest west exploration occurring in Kuiukta Bay. The harvest in the Chignik District has historically been delivered to Kodiak

processors. The management measures for the Chignik sea cucumber fishery were developed at the same time and in the same manner as those adopted for the Kodiak Area fishery. Additionally, effort in the Chignik District has been sporadic and often tied into harvest from the Mainland Section of the Kodiak District. For these reasons, the Chignik Area sea cucumber fishery information is reported under the Kodiak section of this report.

In February 1994, concerns about overharvest in Kodiak and Chignik led the department to establish guideline harvest levels for areas with established harvest histories using areas delineated by the Tanner crab districts. Because little historic effort had occurred in the South Peninsula District and relative resource strength was difficult to assess from the data poor situation, no South Peninsula GHL was established in 1994. A closed season was also established for all sections and districts for the period of April 30 to October 1 to protect spawning aggregates of sea cucumbers. A weekly, five-day fishing period with daily dive logbook requirements was established to monitor the fishery. The fishing period was later reduced in 1995 to three days to improve manageability. A 5,000-pound GHL was developed for the South Peninsula District in 2000. This conservative GHL was implemented for all districts and sections lacking historic harvest data. The goal was to allow exploration by divers while ADF&G gathered data to assess if adjustments to the GHL were needed.

Very little effort has historically occurred in the South Peninsula District for red sea cucumbers. Effort occurred in the 1994 season with three divers registered. The catch during this season remains confidential as only two divers made landings. There was no effort during the 1995/1996 season in the Alaska Peninsula area. In 1996/1997, one diver participated, and the harvest statistics remain confidential. During the 1997/1998 season four divers landed 13,427 pounds. There have been no registered divers for the Alaska Peninsula since the 1997/98 season.

2001/02 Fishery

No fishing occurred in the South Peninsula District during the 2001/02 sea cucumber fishery. The season was open from October 1 through April 30 with a GHL of 5,000 pounds for exploratory fishing.

Stock Status

No biomass assessment is done on red sea cucumbers in the Westward Region. Little commercial harvest has occurred within the Alaska Peninsula District. Actual population levels, especially at depths below those available to the divers, are unknown. In addition, the extent of the westward range of red sea cucumbers is not well documented; however, ADF&G trawl surveys have captured *P. californicus* as far west as Pavlof Bay.

OCTOPUS

Historic Background

Giant Pacific octopus *Octopus dofleini* have been frequently harvested in the Alaska Peninsula area for bait or food since the early 1980s (Table 3-10). Directed fishing for octopus occurs but the majority of the harvest is taken incidental to other fisheries. Until 1988, octopus was usually taken as incidental harvest during the Tanner crab fishery. Since then, octopus has been landed primarily by trawl and pot fishermen targeting Pacific cod. In recent years, over 90% of the octopus catch has been taken with pot gear. The majority of octopus harvest in the Alaska Peninsula Area has come from within state waters. In 1997, a harvest of 52,112 pounds was recorded on fish tickets as taken from state and federal waters. Of this amount, 48,286 pounds were harvested inside three nautical miles. This increase in reported landings of octopus in 1997 was in part due to improved tracking of octopus registrations and subsequent reporting of octopus as incidental harvest that began in the late 1990s. Additionally, more of the Pacific cod harvest in the Central and Western Gulf was taken with pot gear in that year, particularly with the advent of the state waters Pacific cod fishery.

In 2001, ADF&G adopted a revised product recovery rate for octopus designated as “gutted” on fish tickets. The revision has changed historic data within the department’s fish ticket database from 1995 to the present. This report may contain data that is different from previously published reports on octopus harvest.

2001 Fishery

The 2001 harvest of octopus in the Alaska Peninsula area totaled 2,566 pounds from state and federal waters. No vessels registered for directed fishing of octopus in the Alaska Peninsula Area in 2001. All harvest occurred as incidental harvest during groundfish fishing, primarily from vessels targeting Pacific cod using pot gear. Three vessels harvested 345 pounds from five landings in state waters. A total of 2,221 pounds were harvested from federal waters by seven vessels making 17 landings. None of the fish tickets for 2001 had value recorded for the octopus harvest; it was used as bait, retained for personal use, or had no price recorded by the processing facility issuing the fish ticket. It is probable that the intense, short seasons for Pacific cod in both the federal and state fishery resulted in the low harvest of octopus.

Stock Status

No stock assessment is currently conducted on this species in the Westward Region; the population status is unknown.

LITERATURE CITED

Urban, D., D. Pengilly, D. Jackson, I. Vining. 1999. A Tanner crab harvest strategy for Kodiak, Chignik, and the South Peninsula Districts. A Report to the Board of Fisheries. Alaska Department of Fish and Game, Division of Commercial Fisheries, Westward Region, Regional Information Report 4K99-21, Kodiak.

Table 3-1. Landings and values of shellfish fisheries in the South Peninsula Area, 2001.

Species	Pounds	Exvessel Value (Dollars)
Tanner Crab	258,635	320,730
Dungeness crab	Confidential ^a	Confidential ^a
Octopus ^b	2,566	NA
<hr/>		
TOTAL		

^a Less than three vessels or processors participated.

^b Harvest from shellfish and groundfish landings.

NA = Not available

Source: Alaska Department of Fish and Game fish ticket data base, April 2002.

Table 3-2. Shellfish emergency orders issued for the Alaska Peninsula Management Area, 2001.

Emergency Order	Effective Date	Explanation
<u>Tanner Crab</u>		
4-S-01-01	January 15, 2001	Established daily 12-hour fishing periods from 8:00 AM to 7:59 PM in the South Peninsula District of Registration Area J <i>Chionoecetes bairdi</i> Tanner crab fishery beginning 12:00 Noon on January 15 until fishery is closed by emergency order.
4-S-03-01	January 18, 2001	Closed the South Peninsula District of Registration Area J <i>Chionoecetes bairdi</i> Tanner crab at 7:59 PM. on January 18, 2001 for remainder of the season.
<u>Weathervane Scallops</u>		
4-S-18-01	December 8, 2001	Closed the Alaska Peninsula and Dutch Harbor Areas to Weathervane Scallop fishing for entire 2001/2002 season.
<u>King Crab</u>		
4-S-10-01	September 25, 2001	Closed the Registration Area 'K' (Kodiak) and Registration Area 'M' (Alaska Peninsula) to red and blue king crab fishing for 2001/2002 commercial fishing season.

Table 3-3. Catch and effort statistics for red king crab in the Alaska Peninsula Area M, 1947-2001.

Year	Number				Pots Lifted	CPUE	Average Weight	Price Per Pound (\$)
	Vessels	Landings	Crab	Pounds				
1947	NA	NA	18,800	141,000	NA	NA	7.5	NA
1948	NA	NA	518,500	3,363,000	NA	NA	6.5	NA
1949	NA	NA	205,500	3,476,000	NA	NA	12.0	NA
1950	NA	NA	270,000	2,124,000	NA	NA	7.9	NA
1951	NA	NA	86,500	599,000	NA	NA	6.9	NA
1952	NA	NA	32,400	298,000	NA	NA	7.6	NA
1953	NA	NA	38,400	380,000	NA	NA	10.0	NA
1954	NA	NA	31,666	316,660	NA	NA	10.0	NA
1955	NA	NA	164,069	1,640,688	NA	NA	10.0	NA
1956	NA	NA	421,651	4,221,496	NA	NA	10.0	NA
1957	NA	NA	668,709	6,687,092	NA	NA	10.0	NA
1958	NA	NA	724,595	7,245,947	NA	NA	10.0	NA
1959	NA	NA	568,303	6,166,974	NA	NA	10.0	NA
1960	NA	1,496	677,100	6,700,000	NA	NA	9.9	NA
1961	NA	959	419,354	3,900,000	NA	NA	9.3	NA
1962	NA	657	287,624	2,273,013	NA	NA	7.9	NA
1963	27	1,037	970,739	6,539,129	NA	NA	6.7	0.09
1964	40	1,297	1,906,018	14,354,060	NA	NA	7.5	0.10
1965	36	1,081	1,813,728	14,713,501	NA	NA	8.1	0.10
1966	37	1,255	2,494,949	22,577,587	NA	NA	9.0	0.10
1967	39	1,062	1,943,463	17,252,307	NA	NA	8.9	0.19
1968/69	34	885	1,273,567	10,944,472	NA	NA	8.6	0.34
1969/70	33	415	558,800	4,137,000	51,300	11	7.7	0.25
1970/71	25	339	446,042	3,425,760	38,995	11	7.7	0.25
1971/72	26	364	597,394	4,123,130	41,759	14	6.9	0.28
1972/73	29	301	610,300	4,069,362	34,408	18	6.7	NA
1973/74	36	389	658,632	4,260,674	53,642	12	6.9	0.72
1974/75	36	318	644,054	4,572,101	44,951	14	7.1	0.43
1975/76	37	248	367,221	2,605,310	35,104	11	7.2	0.41
1976/77	26	122	125,778	958,069 ^a	17,748	7	7.7	0.61
1977/78	15	73	119,641	726,382	10,551	11	6.1	1.00
1978/79	33	226	520,168	3,093,859	31,142	17	5.9	1.27
1979/80	68	288	738,859	4,453,557	41,753	18	6.0	0.92
1980/81	51	358	821,071	5,080,632	54,114	15	6.2	0.96
1981/82	56	341	515,882	3,168,689	51,776	10	6.1	1.40
1982/83	63	157	271,237	1,683,654	30,894	9	6.2	3.20
1983-2001	NO FISHERY							

NA=Not Available.

^aCombined 6 1/2 inch and 7 1/2 inch seasons.

Table 3-4. Chignik District Tanner crab *Chionoecetes bairdi* catch and effort statistics, 1968-2001.

Year	Number				Pots Lifted	Average Weight	CPUE	Price per Pound ^b (\$)	Percent Recruits ^c
	Vessels	Landings	Crab ^a	Pounds ^a					
1968	NA	NA	NA	21,100	NA	NA	NA	NA	NA
1969	NA	NA	NA	38,100	NA	NA	NA	NA	NA
1970	NA	NA	NA	2,800	NA	NA	NA	NA	NA
1971	NA	NA	NA	152,300	NA	NA	NA	NA	NA
1972	Harvest Confidential								
1973	15	56	297,363	747,788	8,080	2.5	51	0.16	NA
1974	25	115	1,586,560	4,054,873	28,083	2.6	57	0.2	NA
1974/75	25	91	1,438,508	3,649,444	22,675	2.5	63	0.14	NA
1975/76	35	288	2,724,509	11,201,900	52,381	2.5	52	0.19	NA
1976/77	21	141	2,098,226	5,672,919	40,604	2.7	52	0.33	NA
1977/78	32	140	1,725,042	4,693,830	38,414	2.8	45	0.42	NA
1978/79	39	126	926,253	2,536,105	28,378	2.7	33	0.55	NA
1979/80	42	155	2,340,004	3,517,920	54,627	2.6	25	0.54	NA
1980/81	24	112	1,534,847	3,653,723	44,022	2.4	35	0.64	65.6
1981/82	45	174	1,343,500	3,240,576	47,830	2.4	28	1.21	64.7
1983	48	136	1,432,029	3,497,370	60,210	2.4	24	1.12	65.1
1984	17	41	269,724	659,043	14,665	2.4	18	1.09	33.5
1985	15	27	162,448	375,476	15,708	2.3	10	1.42	51.2
1986	6	12	85,697	188,162	7,435	2.2	12	1.97	85.3
1987	10	20	89,329	195,060	7,052	2.2	13	2.28	90.1
1988	6	11	87,148	183,111	6,544	2.1	13	2.33	91.3
1989	6	34	142,470	323,120	9,845	2.3	15	3.05	95.0
1990-2001	No commercial fishery has occurred since 1989.								

^aIncludes deadloss.

^bComputed only for live poundage where price information was available.

^cRecruits = newshell male crab from 137 to 163 mm carapace width.

NA = Not available

Table 3-5. Chignik and South Peninsula Area Tanner crab population estimates, 2001.

Section	Mature Male Abundance Threshold ^a	Mature Male Abundance 2001 Estimate (No.)	Status	Molting Mature Male Abundance	Harvest Rate	Harvestable Crabs (No.)	GHL (pounds)
Chignik	973,000	954,135	Below Threshold	955,000	NA	NA	NA
South Peninsula	1,375,000	1,213,607	Below Threshold	1,214,000	NA	NA	NA

^a "Molting mature male abundance" means the estimated abundance of 100 percent newshell and 15% oldshell male *C. bairdi* that are more than 114 mm carapace width.

Table 3-6. Tanner crab *Chionoecetes bairdi* catch and effort statistics for South Peninsula District, 1967-2001.

Year	Number				Pots Lifted	Average Weight	CPUE	Price per Pounds ^b (\$)	Percent Recruits
	Vessels	Landings	Crab ^a	Pounds ^a					
1967	NA	NA	NA	3,100	NA	NA	NA	NA	NA
1968	NA	155	36,835	110,610	NA	3	NA	NA	NA
1969	NA	173	221,946	606,178	NA	2.7	NA	NA	NA
1970	NA	NA	NA	2,093,600	NA	NA	NA	NA	NA
1971	17	242	813,610	2,140,585	NA	2.6	NA	0.10	NA
1972	NA	NA	NA	3,618,900	NA	NA	NA	NA	NA
1973	36	390	2,213,006	5,615,563	53,573	2.5	41	NA	NA
1974	44	386	3,504,668	8,300,578	58,444	2.4	60	NA	NA
1974/75	44	131	2,053,530	5,195,800	38,153	2.5	54	0.14	NA
1975/76	36	288	2,724,509	6,926,161	52,381	2.5	52	0.20	NA
1976/77	28	389	2,524,565	6,773,838	63,143	2.7	40	0.32	NA
1977/78	36	374	2,847,948	7,446,270	70,587	2.6	40	0.40	NA
1978/79	48	332	3,267,122	8,684,408	82,374	2.7	40	0.51	66
1979/80	61	363	2,581,544	6,961,251	96,989	2.7	27	0.54	40
1980/81	43	268	1,274,539	3,294,106	59,560	2.6	21	0.58	35
1981/82	72	365	1,815,060	4,589,042	81,008	2.5	22	1.05	50
1983	82	230	1,144,096	2,863,798	70,524	2.5	16	1.20	55
1984	61	207	775,472	1,789,883	50,726	2.3	15	1.04	30
1985	52	184	1,097,182	2,549,686	47,465	2.3	23	1.42	73
1986	74	187	1,589,759	3,781,950	65,078	2.4	24	1.72	73
1987	54	106	950,300	2,400,784	37,511	2.5	25	2.03	56
1988	73	148	1,359,371	3,328,809	52,516	2.4	26	2.20	79
1989	65 ^c	87	433,112	1,055,082	27,958	2.4	15	2.70	53
1990-2000	No commercial fishery 1990-2000.								
2001	55	67	107,653	258,631	4,426	2.4	24	1.24	71

^aIncludes deadloss.

^bComputed for live crab.

^cOne additional vessel was registered but did not fish in the district.

NA = not available

Table 3-7. Commercial catch and effort for deepwater Tanner crabs, *Chionoecetes tanneri* and *angulatus*, Alaska Peninsula District, 1994-2001.

Year	Number					CPUE	Average Weight (lbs)	Price Per Pound (\$)	Deadloss (lbs.)
	Vessels	Landings	Crab ^a	Pounds ^a	Pots Lifted				
1994						Confidential			
1995	6	34	600,984	947,014	7,143	81	1.6	1.40	24,473
1996	7	35	335,234	553,028	19,285	17	1.6	1.00	43,643
1997						No commercial fishing effort			
1998						No commercial fishing effort			
1999						No commercial fishing effort			
2000						Confidential			
2001						No commercial fishing effort			

^aDeadloss included.

Table 3-8. Dungeness crab *Cancer magister* harvest statistics, Alaska Peninsula District, 1968 - 2001.

Year	Number				Pots Lifted	CPUE	Ave. Wt. (Lbs.)	Price per Pound (\$)
	Vessels	Landings	Crab ^a	Pounds ^a				
1968	NA	NA	434,142	1,259,013	NA	NA	2.9	NA
1969	NA	NA	411,000	1,056,000	NA	NA	NA	NA
1970	NA	NA	4,200	13,000	NA	NA	NA	NA
1971	NA	NA	3,900	11,000	NA	NA	NA	NA
1972	NA	NA	29,400	65,000	NA	NA	NA	NA
1973			C o n f i d e n t i a l					
1974			N o C o m m e r c i a l F i s h i n g					
1975			N o C o m m e r c i a l F i s h i n g					
1976			N o C o m m e r c i a l F i s h i n g					
1977			N o C o m m e r c i a l F i s h i n g					
1978			N o C o m m e r c i a l F i s h i n g					
1979			C o n f i d e n t i a l					
1980			N o C o m m e r c i a l F i s h i n g					
1981/82			C o n f i d e n t i a l					
1982/83	16	79	357,955	779,600	59,265	6	2.2	0.75
1983/84	18	132	565,430	1,207,128	113,061	5	2.1	0.97
1984/85	13	99	294,191	647,497	106,056	3	2.1	1.38
1985/86	7	31	239,202	488,107	52,117	5	2.0	1.26
1986/87	6	28	87,925	180,261	30,280	3	2.0	1.05
1988			C o n f i d e n t i a l					
1989			C o n f i d e n t i a l					
1990	4	10	31,074	65,806	5,225	6	2.1	1.53
1991	7	18	39,069	80,248	12,813	3	2.1	1.24
1992			C o n f i d e n t i a l					
1993	3	15	127,979	273,811	15,675	8	2.1	0.79
1994	4	24	134,429	277,639	27,950	5	2.1	1.01
1995			C o n f i d e n t i a l					
1996	4	9	47,824	112,388	15,306	4	2.3	1.01
1997	7	17	120,935	240,128	42,324	3	2.0	2.06
1998	3	7	48,629	96,073	14,800	3	2.0	1.50
1999			C o n f i d e n t i a l					
2000	3	3	8,970	18,388	4,350	2	2.1	1.65
2001			C o n f i d e n t i a l					

Table 3-9. South Peninsula and Chignik District shrimp harvest statistics, 1968-2001.

Year	SOUTH PENINSULA				CHIGNIK			
	Number			Price per Pound (\$)	Number			Price per Pound (\$)
	Vessels	Landings	Pounds		Vessels	Landings	Pounds	
1968			Confidential				Confidential	
1969			Confidential				Confidential	
1970	4	173	4,398,800	0.04			890,705	
1971			Confidential				Confidential	
1972/73			14,740,801	0.07			4,829,117	
1973/74	12	347	19,987,246	0.07	33	277	51,673,788	0.08
1974/75	22	387	26,145,720	0.08	37	323	23,392,352	0.08
1975/76	24	326	20,044,112	0.09	50	334	24,435,480	0.08
1976/77	19	424	37,148,932	0.09	48	303	27,232,630	0.10
1977/78	48	409	45,003,794	0.13	50	271	26,512,791	0.13
1978/79	23	108	9,418,276	0.16	40	201	23,257,869	0.17
1979/80	10	41	3,134,367	0.21	35	195	23,722,330	0.23
1980/81			0		54	148	12,843,270	0.29
1981/82			0		3	4	70,948	0.27

No commercial fishing activity has occurred in these districts after 1981/82.

Table 3-10. Harvest statistics of octopus in the state and federal waters of the Alaska Peninsula District, 1980-2001.

Year	State waters			Federal waters			Total				
	Vessels	Landings	Pounds Harvested	Vessels	Landings	Pounds Harvested	Vessels ^a	Landings	Pounds Harvested	Price per Pound	Fishery value (\$)
1980-1985						Confidential					
1986-1987						No fishing					
1988	22	58	9,946	16	132	34,622	31	190	44,568	0.92	41,003
1989	12	41	5,309	15	82	9,581	23	123	14,890	1.00	14,890
1990	7	45	6,746	14	33	2,393	19	78	9,139	1.00	9,139
1991	18	72	15,103	14	36	4,392	29	108	19,495	1.00	19,495
1992	38	183	38,651	39	100	6,579	72	283	45,230	1.00	45,230
1993	9	23	9,017	28	59	3,007	35	82	12,024	1.00	12,024
1994	16	36	15,621	8	14	1,171	23	50	16,792	0.59	9,907
1995	15	49	5,939	15	18	2,140	24	67	8,079	0.45	3,636
1996	20	52	11,258	18	22	4,667	26	74	15,925	0.49	7,803
1997	27	143	48,286	15	20	3,826	34	163	52,112	0.49	25,535
1998	13	15	4,554	13	22	4,638	15	37	9,192	0.53	4,872
1999	9	10	2,051	10	19	1,710	18	29	3,761	0.50	1,881
2000	18	17	1,507	19	19	5,235	30	36	6,742	NA ^b	NA ^b
2001	3	5	345	7	17	2,221	7	22	2,566	NA ^c	NA ^c

^a Some vessels made landings in both state and federal waters.

^b No fish tickets provided price information in 2000; octopus were retained as bait or personal use or price per pound was not recorded by processing plant.

^c Only one fishticket provided price information in 2001; most octopus were retained as bait or personal use.

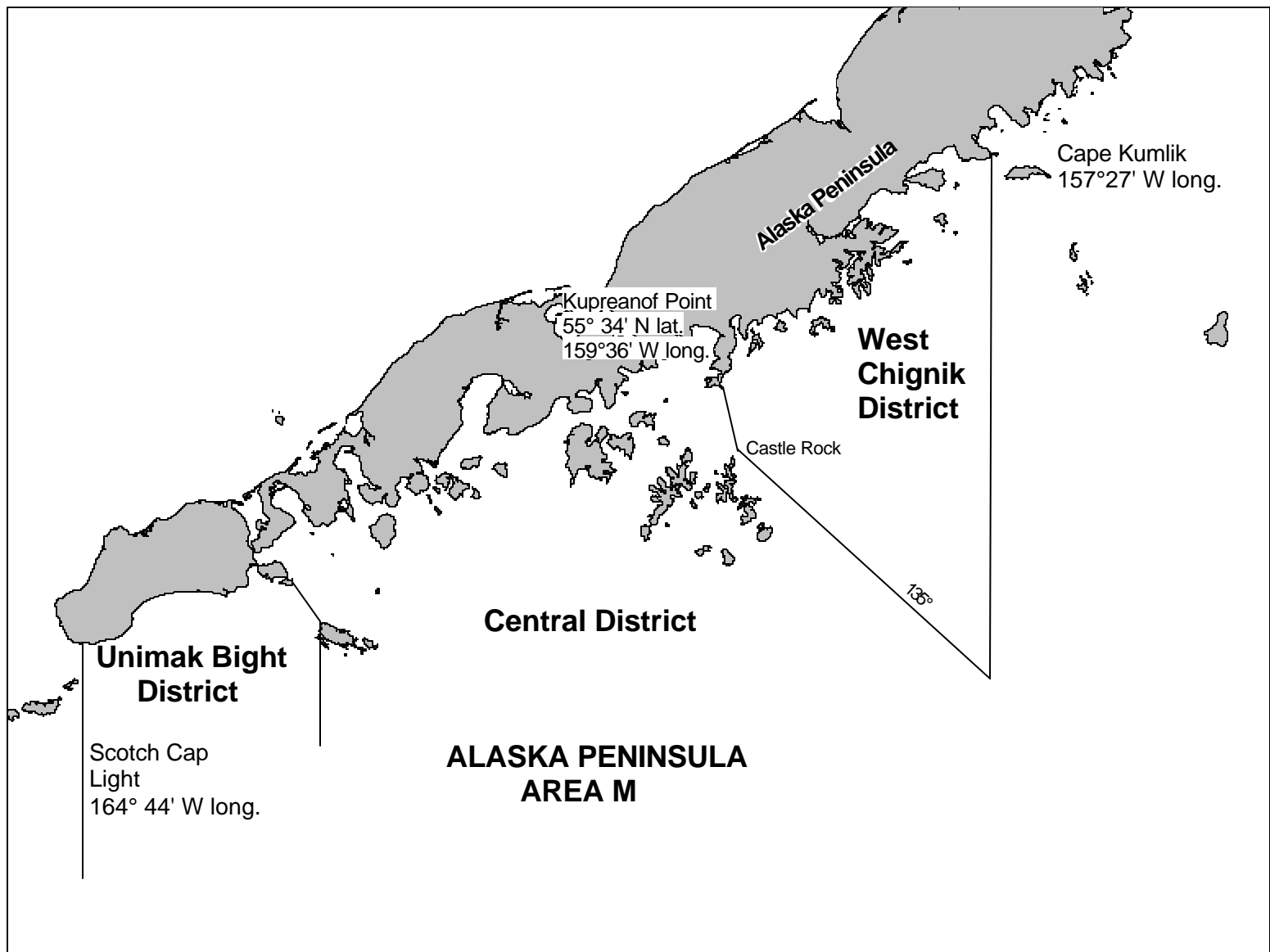


Figure 3-1. Unimak Bight, Central, and Chignik Districts of the king crab Registration Area M.

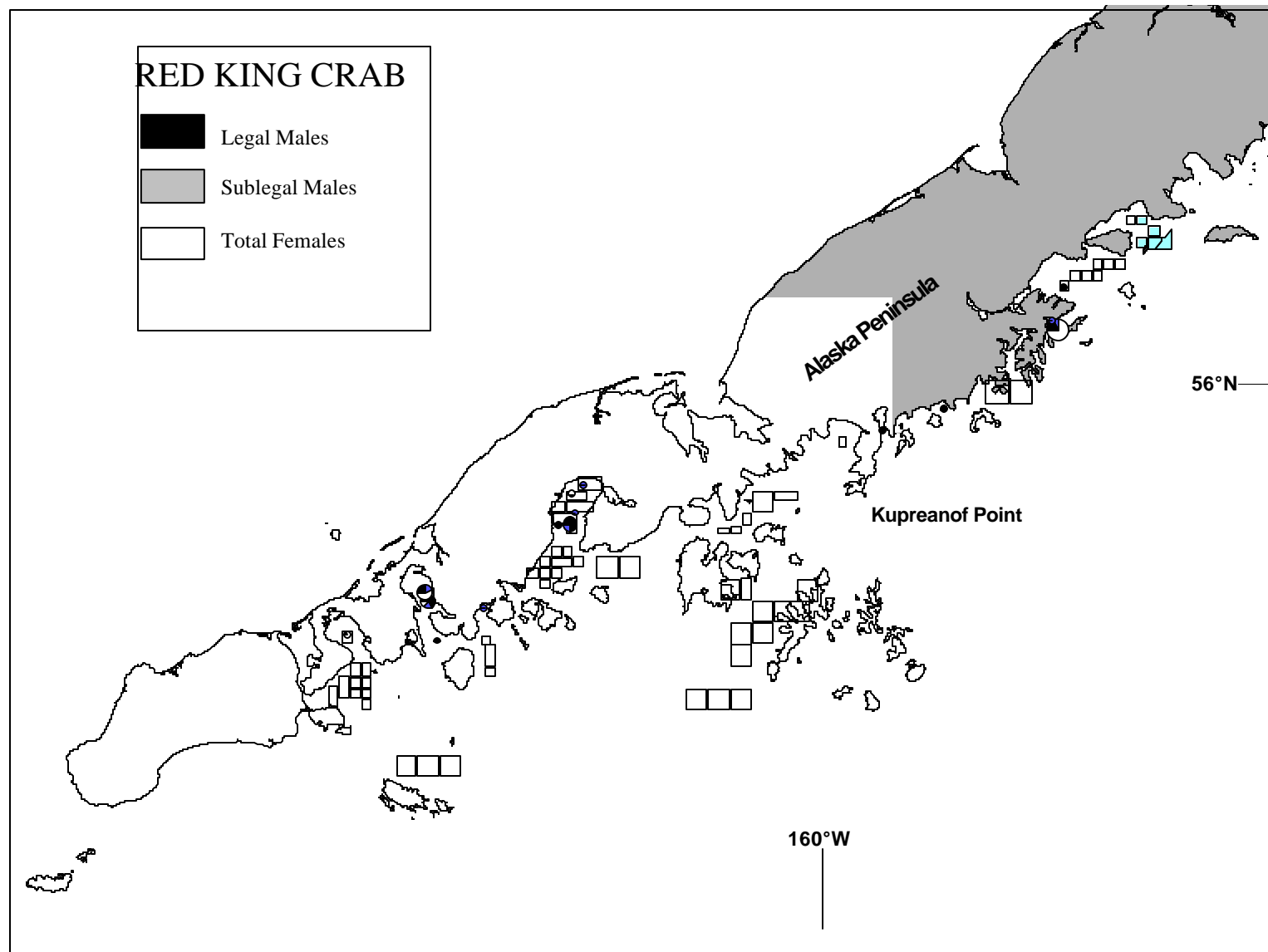


Figure 3-2. Survey stations towed and number of red king crabs per kilometer towed during the 2001 Alaska Peninsula trawl survey.

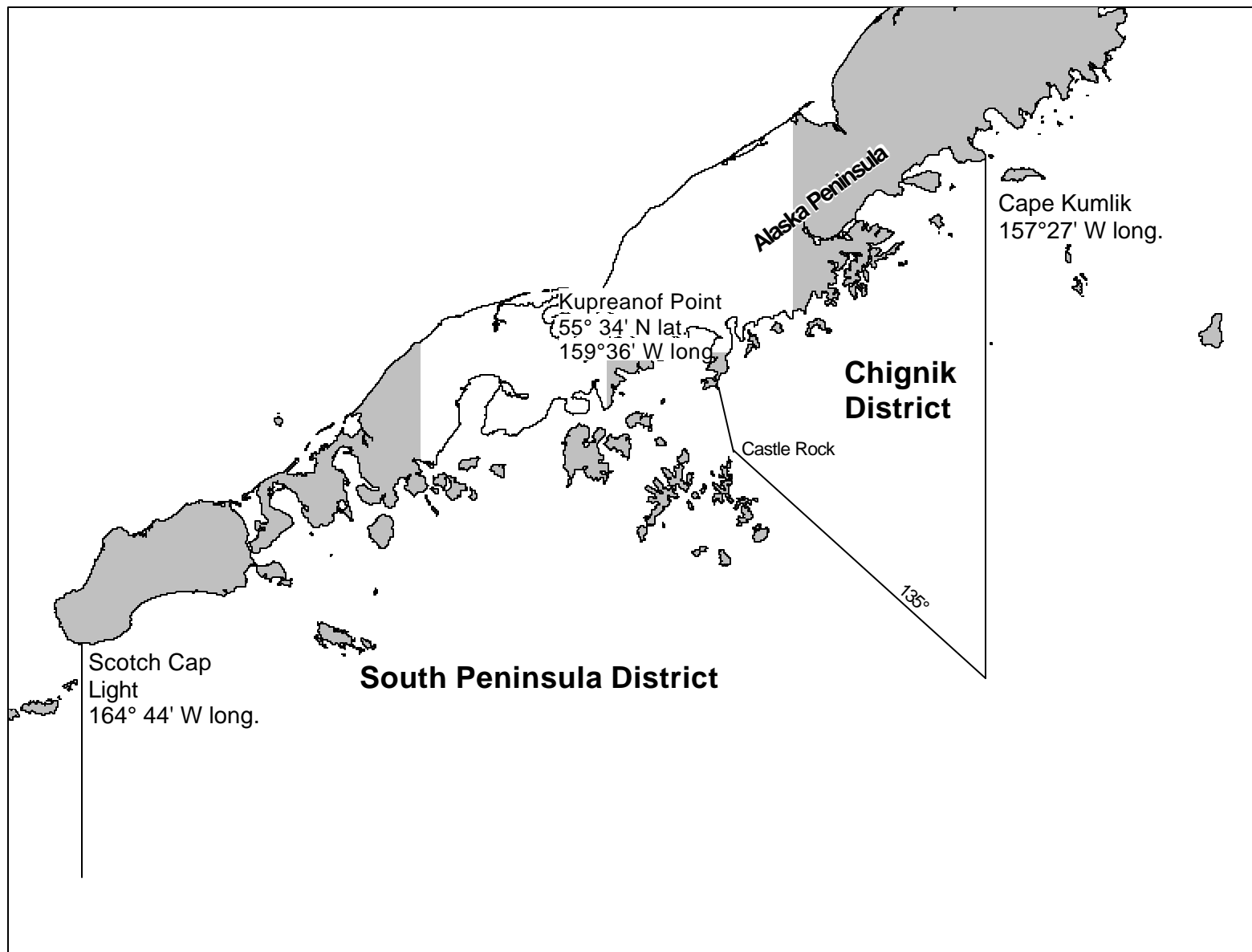


Figure 3-3. Chignik and South Peninsula Districts of Tanner crab Registration Area J.

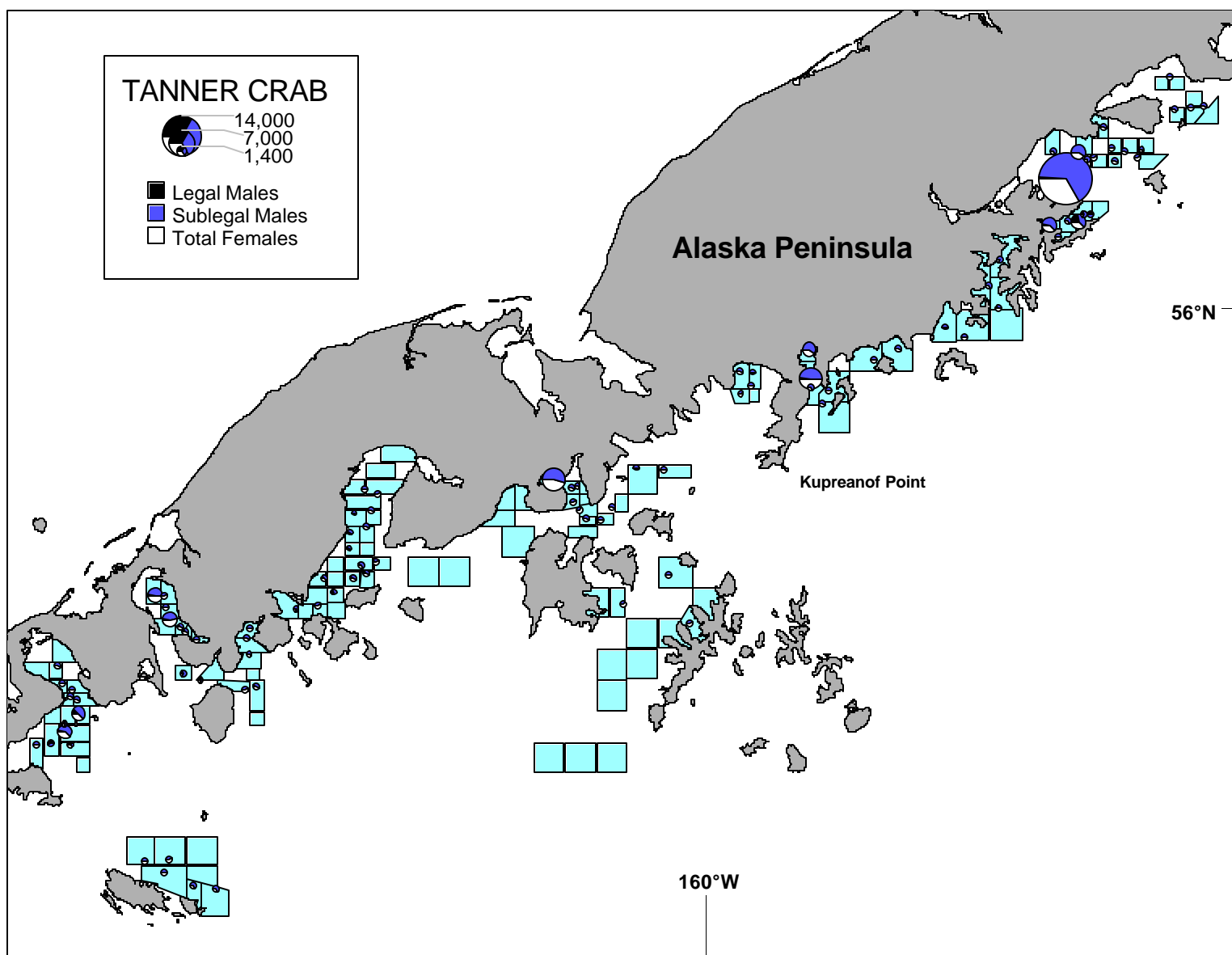


Figure 3-4. Survey stations towed and the number of Tanner crabs per kilometer towed from the 2001 Alaska Peninsula trawl survey.

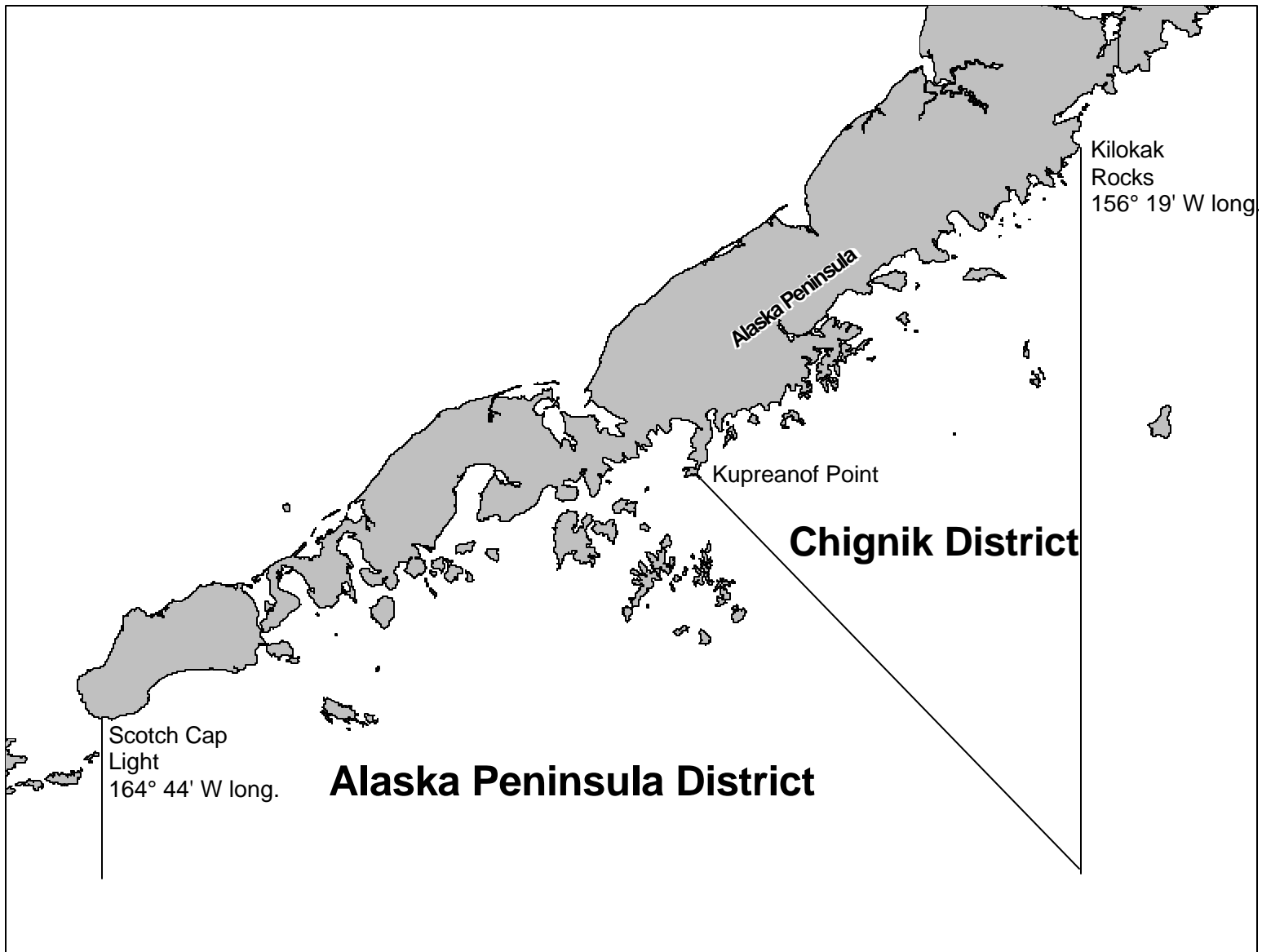


Figure 3-5. Alaska Peninsula and Chignik Districts of Dungeness crab Registration Area J.

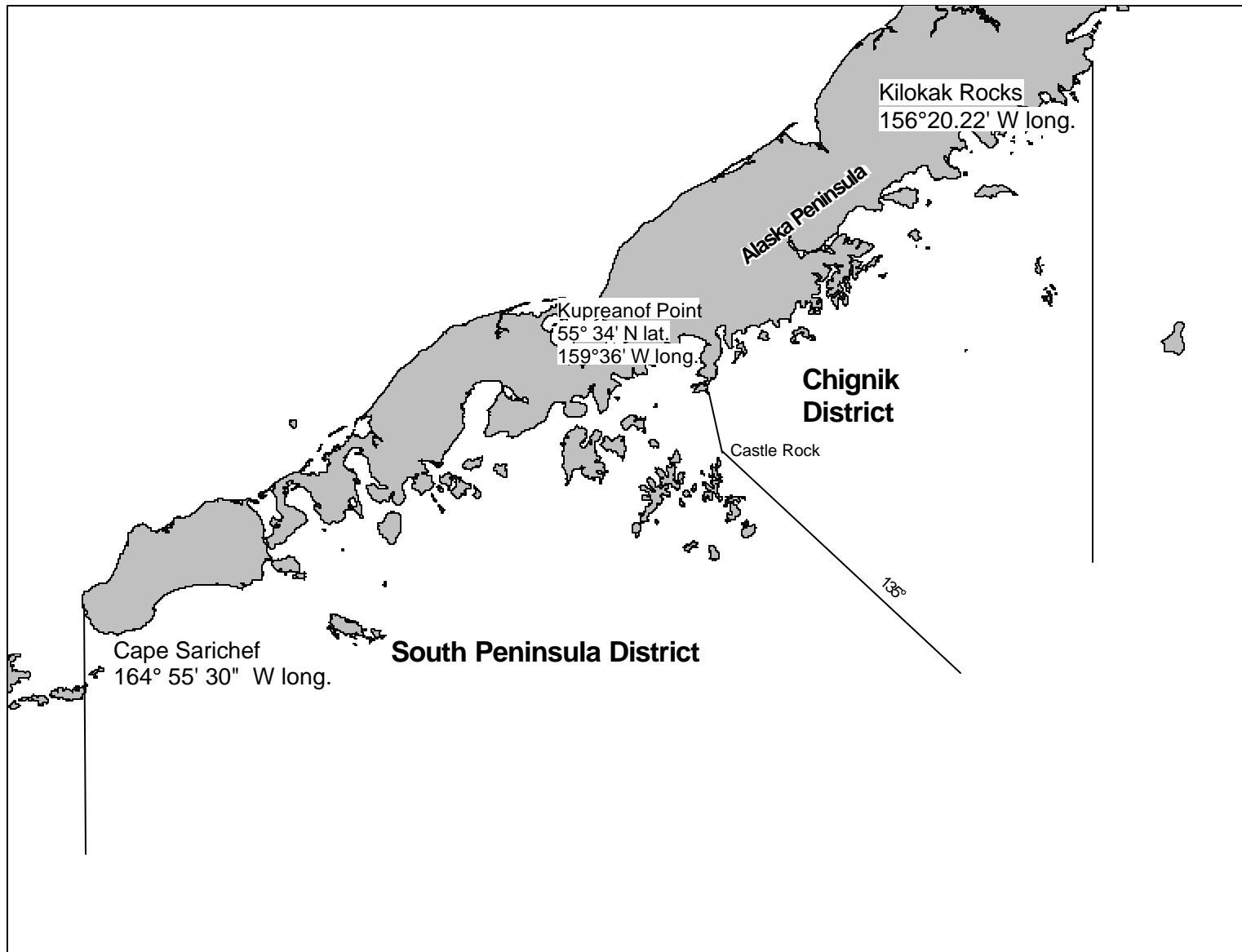


Figure 3-6. Chignik and South Peninsula Districts of shrimp Registration Area J.

ANNUAL MANAGEMENT REPORT FOR THE
COMMERCIAL AND SUBSISTENCE SHELLFISH FISHERIES OF THE
ALEUTIAN ISLANDS

By

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ALEUTIAN ISLANDS KING CRAB MANAGEMENT AREA

Description of Area

The Aleutian Islands king crab Registration Area O has as its eastern boundary the longitude of Scotch Cap Light (164°44' W long.), its western boundary the U.S.-Russia Convention Line of 1867, and its northern boundary a line from Cape Sarichef (54°36' N lat.) to 171° W long., north to 55°30' N lat., and west to the U.S.-Russia Convention Line of 1867 (Figure 4-1).

ALEUTIAN ISLANDS RED KING CRAB

Historical Background

Historically, the red king crab *Paralithodes camtschaticus* resource in the Aleutian Islands was harvested in two registration areas. The Adak Registration Area consisted of those waters in the Aleutian Islands west of 171° W long. while the Dutch Harbor Registration Area encompassed waters east of 171° W long. (Figure 4-2). In addition, as the fleet moved westward, a third Registration Area, Area S, was established for the waters around Amchitka Island and the Petrel Bank. Area S was created in 1967 and was merged into Area R in 1978 (ADF&G 1991). In March of 1996, the Alaska Board of Fisheries (BOF) established the Aleutian Islands king crab Registration Area (Area O) by combining the existing Dutch Harbor and Adak Registration Areas. The BOF adopted this change to improve management of the increasingly important golden king crab *Lithodes aequispinus* stocks in the Aleutian Islands. Combining the Adak and Dutch Harbor Areas was not expected to impact management of red king crabs in the Aleutian Islands (ADF&G 1999a).

Domestic fisheries for red king crabs in both the Adak and Dutch Harbor Registration Areas began in 1961, with effort and harvest increasing rapidly in both areas. The Adak Area reached a peak harvest of 21 million pounds in 1964/65, while maximum production in the Dutch Harbor Area was reached in 1966/67 with a harvest of 33 million pounds (Table 4-1, Figure 4-3). Fluctuating harvest levels from one year to the next characterized the fisheries in the Dutch Harbor and Adak areas, and by the 1982/83 season the Dutch Harbor fishery had declined to a harvest of 430,000 pounds. Commercial fishing for red king crabs in the Dutch Harbor Area was closed on an annual basis after the 1982/83 season. The Adak fishery remained open until the 1995/96 season when only 39,000 pounds were harvested. Since the 1995/96 season, the fishery has remained closed with the exception of the 1998/99, 2000/01, and 2001/02 seasons when portions of the area were opened in order to assess the status of red king crab stocks. The Aleutian Islands red king crab fishery had a maximum fishery value of nearly \$20 million in the 1980/81 season (Table 4-2).

When both the red and golden king crab seasons are open concurrently, red king crabs may be retained from longlined golden king crab pots provided the pots are fished in waters deeper than 100 fathoms. Otherwise, red king crabs may only be retained from red king crab pots fished in a single pot fashion. There is no pot limit for king crab fisheries in the Aleutian Islands. Observers have been required on all crab catcher-processor vessels since 1988 and on catcher vessels

targeting red and golden king crabs in the Aleutian Islands since 1995. Observer coverage on golden king crab vessels provides red king crab bycatch data from that fishery, although red king crab catch in golden king crab gear is minimal due to the limited overlap in distribution of the two species. In the directed red king crab fishery, observer coverage provides data on retained and non-retained crabs as well as information related to fishing patterns.

In 1996 and 1997, a catcher-processor vessel was permitted to target red king crabs on the Petrel Bank during directed golden king crab fishing. The goals of this project were to enumerate, tag, and collect biological data from all red king crabs captured and to recapture tagged individuals. A total of 926 crabs were tagged over a two year period along the north side of Amchitka Island and along the south side of Semisopochnoi Island. Of the tagged crabs, 440 were legal males and 160 were females; 89% of legal crabs were new shell. Recovery efforts yielded 15 tagged crabs, 6 of which were legal males. While the tagging was too limited to provide quantitative stock assessment data, it did provide some information related to migration, molting cycle, and seasonal distribution (Byersdorfer 1998).

Since the 1995/96 season, commercial fishing has occurred only during the 1998/99 season. In order to assess the status of red king crab stocks in portions of the Aleutian Islands where the department has gained little recent abundance information, the Aleutian Islands king crab Registration Area was opened to commercial red king crab fishing on November 1, 1998. A limited commercial fishery was opened in two areas of the Aleutian Islands with the provision that crabs not harvested be tagged and released. In addition, vessel operators were required to document all red king crab fishing activities in a pilot house log book. East of 179° W long., a GH of 5,000 pounds was established and west of 179° E long., a GH of 10,000 pounds was set; these GHs were set using historic catch information. Closed waters included the Petrel Bank, or the area between 179° E long. and 179° W long. The department did not open the Petrel Bank area in 1998/99 since prior efforts had provided some population data from that area (Byersdorfer 1998).

Three vessels registered to harvest red king crabs in the Aleutian Islands during the 1998/99 season, but only one recorded any landings. The GH was not reached in either open area and the fishery was closed by emergency order on July 31, 1999. Observers were required on all vessels participating in the 1998/99 fishery.

In addition to commercial fisheries, long-standing subsistence and sport fisheries have targeted red king crabs in the vicinity of Unalaska Island. To gather subsistence harvest data, the department has periodically required fishers to obtain a harvest permit and logsheet. Historically, few of the permits were returned and the program was discontinued in 1994. On average, 15 permits were returned per year. The reported average annual harvest was 135 king crabs.

To address conservation concerns for the eastern Aleutian Islands red king crab stock, the BOF took action at the March 1999 meeting regarding the subsistence and sport king crab fisheries in that portion of the Aleutian Islands between 168° and 164°44' W long. Regulations were adopted by BOF that closed the sport fishery and reduced the daily bag limit of subsistence king crabs from six to one per day. BOF also adopted regulations requiring that subsistence king and Tanner crab fishers operating in the Aleutian Islands between 168° and 164°44' W long. obtain a subsistence permit before fishing.

In 1999, ADF&G staff issued 179 subsistence permits and harvest logsheets, of which 80, or 45%, were returned. The 80 returned permits accounted for a harvest of 786 king crabs (Table 4-3). Estimates generated from the subsistence harvest logsheets indicate that approximately 1,434 king crabs were taken with harvest ranging from 0 to 131 king crabs per permit. The majority of subsistence-caught king crabs were taken in Illiuliuk and Captain's Bays and most of the king crab harvest occurred prior to the end of July. These harvest figures are substantially less than estimates generated by a 1994 survey of 15.1% of households in Unalaska, where 6,892 king crabs were estimated to have been taken (ADF&G 1999b).

In 2000, ADF&G issued 192 subsistence permits and harvest logsheets, 56 or 29%, were returned. The returned permits accounted for a harvest of 314 king crabs (Table 4-3). Estimates generated from the subsistence harvest logsheets indicate that approximately 1,124 king crabs were taken with harvest ranging from 0 to 68 king crabs per permit. Most of the king crabs were taken in South Channel and Captain's Bay. The majority of the harvest occurred prior to the end of July with peak catches occurring in June.

2001/2002 Commercial Fishery

The commercial fishery for red king crabs in the Aleutian Islands was not opened during the 2001/02 season due to low stock abundance.

2001 Subsistence Fishery

In 2001, ADF&G staff in Dutch Harbor issued 199 subsistence permits and harvest logsheets, of which 100, or 50%, were returned. The returned permits accounted for a harvest of 675 king crabs (Table 4-3). Estimates generated from the subsistence harvest logsheets indicate that approximately 1,350 king crabs were taken with harvest ranging from 0 to 62 king crabs per permit. The majority of the king crabs were taken in the South Channel and adjacent to the landfill, with peak harvest occurring in June and July.

Fishery Management and Stock Status

Western Aleutian Islands pot surveys conducted from 1975 to 1977 provided CPUE (catch per unit of effort, defined as number of legal crabs per pot lift), fecundity, and relative abundance information (ADF&G 1978). Pot surveys were conducted on an annual basis in the Dutch Harbor Area until 1990 when trawl surveys were implemented to survey larger areas in a more timely fashion and to reduce gear selectivity inherent to pot fishing activities (Urban 1992). In the late 1970s, guideline harvest level (GHL) ranges were established using a blend of pot survey results and fisheries data. Historic fishery GHLs set in the late 1970s ranged from 8.0 million to 26 million pounds for Dutch Harbor and from 0.5 million to 3.0 million pounds in Adak (ADF&G 1978). GHLs were often modified inseason based on fishery performance.

Most shellfish research in the Aleutian Islands has been directed at crab stocks inhabiting the eastern Aleutian Islands. Bottom trawl surveys of the waters around Unalaska Island were conducted in 1991, 1994, 1995, and 1999. Recent bottom trawl surveys have not captured large

numbers of king crabs. In 1995, only two red king crabs were caught, thus no population estimate could be generated. During the 1999 survey, 72 red king crabs were caught, one of which was a legal male. All others were pre-recruit males and small females captured in a single tow made in Kalekta Bay (Worton 2000). This catch, while encouraging, does not appear to constitute a rebuilding event. The eastern Aleutian Islands were again surveyed by bottom trawl during the summer of 2000 and a single red king crab was captured (Worton 2001), indicating that the red king crab population in the eastern Aleutian Islands remains severely depressed.

In order to address concerns for red king crab abundance in the Petrel Bank area, a survey was conducted in January/February and November, 2001. Because of budget constraints, the survey was designed so that fishers could retain and sell all legal male red king crabs captured to cover survey expenses. The commissioner's permit specified stations to be fished, soak times, and effort levels.

Capture of red king crabs from both of the 2001 surveys in the Petrel Bank area indicate healthy levels of legal males. CPUE for the combined surveys was 28. Survey CPUEs are not directly comparable to previous commercial fishery CPUE because pot lifts in prior commercial fisheries were not conducted in a systematic manner and may have occurred in different fishing locations (Bowers et al. 2002). Captured sublegal male and female crabs per pot for the combined surveys was 1 and 2 respectively.

Size frequency data from the 2001 surveys were comparable to the size composition that was found in catches prior to the 1995/96 fishery closure. The size frequency indicates that approximately 80% of the sampled legal-size crabs were post recruits. Of the crabs sampled 77% were new-shell. From 1990 to 1994, CPUE and bycatch of sublegal crabs greatly declined. Similar to the surveys conducted in the mid 1990s, very few sublegal crabs were captured during the 2001 surveys.

The surveys conducted in 2001 indicate that legal male abundance has increased since the fishery was closed, however female and sublegal abundance remain low. Given current legal male abundance, a limited commercial fishery on the Petrel Bank is planned for the 2002/03 season. Establishing a low GHL with a moderate CPUE threshold level should help prevent the stock from declining to levels seen in the mid-90s. Trends in fishery performance will be used to evaluate future GHLs and having a defined threshold for closing the fishery will permit clearer understanding of the management strategy. Prior to opening a commercial fishery in other portions of the Western Aleutians, the department will need to conduct surveys similar to those performed on the Petrel Banks.

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ALEUTIAN ISLANDS GOLDEN KING CRAB

Historic Background

The golden king crab *Lithodes aequispinus* fishery in the Aleutian Islands has never failed to open due to low stock abundance, making it unique among Westward Region king crab fisheries. Golden king crabs inhabit depths greater than where other commercially exploited king crabs are typically found (Blau et al. 1996). The depths and steep bottom topography of the inter-island passes inhabited by golden king crabs necessitate the use of longline rather than single-pot gear. There are no other major king crab fisheries in Alaska where longline pot gear is the only legal gear type.

Historically, golden king crabs were taken as incidental harvest during red king crab fisheries in the Adak (Area R) and Dutch Harbor (Area O) Registration Areas. One landing of golden king crabs was reported from the Adak Area during the 1975/76 season, but directed fishing for golden king crabs did not occur in either management area until the 1981/82 season (ADF&G 1984). From the 1981/82 season until the 1996/97 season, the golden king crab resource in the Aleutian Islands was harvested in two directed fisheries occurring in the Adak and Dutch Harbor Registration Areas.

During the 1981/82 season, 14 vessels landed 1.2 million pounds of golden king crabs in 76 deliveries from the Adak Area (Table 4-4). By the following season, harvest had reached 8.0 million pounds with 99 vessels participating in the fishery. Between 1981 and 1995, an average

of 49 vessels participated in the Adak golden king crab fishery, harvesting an average of 6.9 million pounds annually. Peak harvest in the Adak fishery occurred during the 1986/87 season when 12.8 million pounds of golden king crabs were harvested for an exvessel value of \$37.6 million (Table 4-5). No stock assessment of the golden king crab population was performed in the Adak area and initially the fishery was managed based on size, sex, and season restrictions. Catches were monitored inseason (ADF&G 1999) and after the initial fishery, harvest levels were set based on harvest expectations generated from catch in prior seasons (ADF&G 1983). The majority of golden king crabs harvested in the Adak Area were taken in the North Amlia and Petrel Banks Districts; however, significant harvest also occurred in the Western Aleutian District (Figure 4-2).

From the 1981/82 season to the 1995/96 season, average weight of golden king crabs harvested in the Adak Area fishery declined from 5.5 to 4.2 pounds and CPUE declined from 9 to 5 legal crabs per pot pull (Figure 4-4). In July 1985, BOF adopted a regulation reducing the minimum legal size for golden king crabs from 6.5 to 6.0 inches in carapace width (CW). Decreasing the legal size for golden king crabs in this area resulted in an expected decrease in average weight of legal crabs harvested after 1985/86 and increased catch during the 1985/86 and 1986/87 seasons. This regulation change did not, however, reverse the trend of slowly declining catch rates in the area west of 171° W long.

Initial catches of golden king crabs in the Dutch Harbor Area were similar to those observed in the Adak Area fishery (ADF&G 1984). Harvest was incidental to the red king crab fishery and effort in the fishery only increased as red king crab stocks decreased in abundance. Six vessels harvested approximately 116,000 pounds of golden king crabs during the 1981/82 Dutch Harbor red king crab season (Table 4-4). By the following season, 49 vessels were participating in the directed golden king crab fishery, harvesting 1.2 million pounds. Between 1981 and 1995, an average of 18 vessels harvested approximately 1.5 million pounds of golden king crabs annually (Figure 4-5). Peak golden king crab harvest in the Dutch Harbor Area occurred during the 1995/96 season when 2.0 million pounds were harvested for an exvessel value of \$5.2 million (Table 4-5). The Dutch Harbor Area harvest was primarily from the Islands of Four Mountains and Yunaska Island area (Figure 4-1).

In general, average weight of golden king crabs harvested in the Dutch Harbor Area declined during the period from 1981 to 1995, ranging from a high of 7.6 pounds in the 1983/84 season to 4.1 pounds during the 1992/93 season (Figure 4-5). CPUE has slowly declined throughout the history of this fishery, reaching a peak of 14 legal crabs per pot during the 1984/85 season and declining to 6 crabs during the 1994/95 season. The golden king crab stock in the Dutch Harbor Area was not surveyed for abundance prior to 1991 and the fishery was managed based on a historical average catch of 1.5 million pounds annually (ADF&G 1999). In 1984, BOF adopted an ADF&G staff proposal to lower the legal size for golden king crabs in the Dutch Harbor Area from 6.5 inches to 6.0 inches CW and to establish the area as a permit fishery.

At its March 1996 meeting, BOF chose to restructure management of king crabs in the Aleutian Islands. Formerly, the Aleutian Islands king crab populations had been managed using the Adak and Dutch Harbor Registration Areas that were established for red king crab fisheries. During the 1970s and 1980s, however, red king crab fisheries declined in the Aleutian Islands while the golden king crab fishery gained increasing importance. Consequently, BOF felt that king crab management areas in the Aleutian Islands should be re-designated to more accurately reflect

current golden king crab stock distribution and patterns in fishing effort. BOF, therefore, elected to replace the Adak and Dutch Harbor Areas with the newly created Aleutian Islands Registration Area O and directed ADF&G to manage the golden king crab stocks in the areas east and west of 174° W long. as two distinct stocks. It also stipulated that a conservative management plan be initiated, and that all vessels registered for the fishery continue to carry an onboard observer for all of their fishing activities.

In 1996/97, when the initial golden king crab fishery in the new king crab Registration Area O occurred, a GHL of 3.2 million pounds was established for the area east of 174° W long. and 2.7 million pounds for the area west of 174° W long. Compared to prior combined Adak and Dutch Harbor Area fisheries, there was reduced effort and harvest during the 1996/97 fishery. Eighteen vessels harvested 5.9 million pounds, down from 28 vessels taking 6.9 million pounds in 1995/96. This reduction in effort was likely due to the departure of vessels for the Bristol Bay red king crab season, which re-opened to commercial fishing in 1996 for the first time since 1993. The eastern portion of Area O closed by emergency order on December 25, with a harvest of 3.3 million pounds, while the western portion was open for the entire registration year with a harvest of 2.6 million pounds.

During the 1996/97 fishery, the harvest rate east of 174° W long. was six legal crabs per pot pull with an average weight of 4.5 pounds per crab. Most fishing effort was concentrated in the area around Yunaska Island and the Islands of Four Mountains with some effort in the Segum and Amukta Pass areas (Figure 4-2). In that portion of Area O west of 174° W long., fishery performance was six legal crabs per pot pull with an average weight of 4.2 pounds per crab (Table 4-4). Most harvest occurred between Amchitka Pass and Buldir Island. The 1996/97 golden king crab fishery in the Aleutian Islands had an estimated exvessel value of \$12.5 million (Table 4-5).

Since the 1996/97 season, effort and harvest have remained relatively stable in the Aleutian Islands east of 174° W long. During the 1997/98 season, 13 vessels harvested 3.5 million pounds in an 84-day season. CPUE averaged seven legal crabs per pot lift and harvested crabs averaged 4.5 pounds each. The fishery west of 174° W long. has experienced greater variability in catch and effort. During the 1997/98 season, eight vessels participated in the fishery and harvested 2.4 million pounds. The GHL west of 174° W long. was not reached and subsequently the fishery was not closed. The fleet averaged seven legal crabs per pot lift with landed crabs averaging 4.3 pounds each. The 1997/98 Aleutian Islands golden king crab fishery had an exvessel value of \$12.5 million.

Prior to the 1998/99 season, the Aleutian Islands golden king crab GHL east of 174° W long. was reduced from 3.2 million pounds to 3.0 million pounds. Fishery performance trends and data from tag recoveries indicated that the 200,000 pound GHL reduction for the area east of 174° W long. was necessary in order to comply with the overfishing definition specified in the Fishery Management Plan (FMP) for the king and Tanner crab fisheries of the Bering Sea and Aleutian Islands (NPFMC 1998).

The 1998/99 fishery east of 174° W long. was similar to the prior two fisheries. Fourteen vessels registered and harvested 3.2 million pounds in a 68-day season. The catch accrued at a rate of nine legal crabs per pot lift with landed crabs averaging 4.4 pounds each. West of 174° W long., effort declined significantly from the prior two seasons. A fleet of three vessels harvested 1.7

million pounds, or 63% of the GHL. The fleet averaged 12 legal crabs per pot lift with landed crabs averaging 4.1 pounds each. The 1998/99 fishery had an exvessel value of \$9.3 million, the lowest ever.

In July 1999, BOF adopted a regulation to move the Registration Area O golden king crab fishery from September 1 to August 15 in order to accommodate fishers that participate in both the golden king and Bristol Bay red king crab (BBRKC) fisheries. The BBRKC fishery opening date had been moved from November 1 to October 15, which reduced the amount of fishing time available to the golden king crab fleet prior to the Bristol Bay opening. The change in opening date for Area O was designed to provide adequate fishing time for the golden king crab fleet to harvest the GHL east of 174° W long. prior to the opening of the BBRKC fishery.

In 1999/2000, the fishery east of 174° W long. continued the stable trend seen in the previous three years. Sixteen vessels registered and harvested 3.1 million pounds. The CPUE was nine legal crabs per pot, with a 4.3-pound average weight per crab. West of 174° W long., effort increased to a level not seen since 1996/1997. A fleet of 15 vessels harvested 2.8 million pounds. The CPUE was seven legal crabs per pot, while the average weight per crab was 4.1 pounds. With an exvessel value of just under \$43 million, the 1986/87 season was the most valuable golden king crab fishery to date.

In the Aleutian Islands golden king crab fishery the long term trend in fishing effort is a decline in the number of vessels registered per season with increasing number of pots registered per vessel (Figure 4-6). With the adoption of longline gear in 1986, vessels became more specialized in fishing for golden king crabs and were able to more efficiently operate gear. In recent years, with shorter Bristol Bay red king and Bering Sea snow crab fisheries, those longline vessels that also fish in the Bering Sea have increased their effort in the Aleutian Islands. While the total number of vessels registered remained relatively constant, the amount of time relative to other crab fisheries that these vessels spend fishing in the Aleutian Islands has increased, resulting in shorter golden king crab fisheries.

2000/2001 Fishery

The 2000/2001 Aleutian Islands golden king crab fishery opened at 12:00 noon August 15 with a GHL of 5.7 million pounds, 3.0 million pounds of which was apportioned to the area east of 174° W long. and 2.7 million pounds apportioned to the area west of 174° W long. Seventeen vessels participated in the fishery and landed 6.0 million pounds. The fleet averaged eight legal crabs per pot lift, the same as the 1999/2000 CPUE, and landed crabs averaged 4.3 pounds each, a slight increase from the prior season.

East of 174° W long.

The commercial fishery for golden king crabs in the Aleutian Islands east of 174° W long. began with 15 vessels registered. The fleet registered 9,703 pots, or 647 pots per vessel, a 2% increase from the 1999/2000 fishery when 9,514 pots, or 595 pots per vessel, were registered. Most fishing effort occurred in the vicinity of Seguam and Amukta passes and in the Yunaska Island and Islands of Four Mountains area. Catch rates were highest in Seguam and Amukta Passes, yielding up to 18 legal crabs per pot lift, compared to 10 crabs per pot lift in this area the

previous season (Table 4-6). The average catch rate for the entire eastern portion was 10 legal crabs per pot lift, a slight increase from 1999/2000. The average weight of legal crabs was 4.5 pounds, a slight increase from the 1999/2000 season, with the largest crabs encountered east of 169° W long. and around Seguam Island (172°30' W long.) (Figure 4-7).

The fleet harvested 3.1 million pounds of golden king crabs in approximately six weeks of fishing. Landings averaged approximately 448,000 pounds per week with a maximum of 812,000 pounds landed in a single week. Three shore-based plants in Dutch Harbor and one in Adak processed golden king crabs from the eastern Aleutian Islands. Exvessel price paid for live, whole crabs in Dutch Harbor was \$3.50 per pound, leading to a fishery value of \$10.8 million. A fishery closure announcement was issued to the fleet on September 18, providing the fleet with six days advance notice of the September 24 closure. In comparison, the fleet required approximately two weeks less time in 2000/01 to harvest a product volume similar to that taken during the 1999/2000 season.

West of 174° W long.

Fishing effort west of 174° W long. was limited to two vessels until after the closure of the eastern Aleutian Islands golden king and Bristol Bay red king crab fisheries when an additional 10 vessels registered. The fleet registered 8,910 pots, or 742 pots per vessel. Western Aleutian Islands effort decreased slightly from the 1999/2000 level when 15 vessels registered and fished 10,564 pots, or 704 pots per vessel. Harvest occurred primarily around the Delarof Islands and Buldir Reef (Table 4-6). Weekly catch rates ranged from 4 to 14 legal crabs per pot lift and averaged 7, same as that for the 1999/2000 season. Catch rates were highest around the Delarof Islands (178°30' W long.) and north of Kiska Island (177°30' E long.), while the average weight of legal crabs was 4.1 pounds (Figure 4-7).

The fleet harvested 2.9 million pounds of golden king crabs west of 174° W long. Landings averaged approximately 74,000 pounds per week with a maximum of 233,000 pounds landed in a single week. Three shore-based processors in Dutch Harbor and one in Adak paid fishers approximately \$3.10 per pound for live, whole crabs, yielding a fishery exvessel value of \$8.8 million. A fishery closure announcement was issued to the fleet on May 21, giving fishers seven days advance notice of the May 28 closure. The 2000/2001 fishery was the only western Aleutian Islands golden king crab fishery that has been closed by emergency order because the GHL was met. All prior western Aleutian Islands golden king crab fisheries have remained open until the regulatory closure.

2001/2002 Fishery

The 2001/2002 Aleutian Islands (Area O) golden king crab fishery opened by regulation at 12:00 noon August 15. The GHL of 5.7 million pounds was again allocated into eastern (3.0 million pounds) and western (2.7 million pounds) portions. Nineteen vessels participated in the eastern fishery and deployed 12,927 pots, an average of 680 pots per vessel. The fleet harvested approximately 790,000 pounds per week with an average CPUE of 12 legal crabs per pot lift. The fishery closed on September 10 after 3.16 million pounds had been taken (Table 4-7). Exvessel price was \$3.30 per pound, with a total fishery value of \$10.6 million, making it the

second most valuable eastern Aleutian Islands golden king crab fishery on record. The fishery west of 174° W long. is currently open until further notice.

Fishery Management and Stock Status

The Aleutian Islands golden king crab fishery is managed using two sources of inseason fishery data. Processors report landed catch to ADF&G weekly or more frequently as requested. These reports are the primary source of inseason harvest information. Observers stationed on each vessel participating in the fishery report average weight and catch rate information that is used in conjunction with landed catch to develop inseason projections of fishery length.

The department surveyed a small portion of the golden king crab habitat in the Aleutian Islands during the summer of 1997 (Blau et al. 1998). Prior to that, the department performed the only survey of this area in 1991 (Blau and Pengilly 1994). Only a small portion of the area in which golden king crabs are commercially important is currently surveyed. Mark-recapture data from the 1997 survey suggested that the commercial fishery was annually removing a minimum of 20% of the legal male crabs present in the area surveyed. The FMP for King and Tanner Crabs in the Bering Sea and Aleutian Islands specifies that the golden king crab stock in the Aleutian Islands is considered overfished when fishing mortality (F) exceeds 0.2 (NPFMC 1998). A fishing rate of $F=0.2$ corresponds to an annual mature male removal rate of approximately 18%. During the 1997/98 season, the GHL of 3.2 million pounds in the area east of 174° W long. was exceeded by approximately 300,000 pounds. Therefore, to maintain a long-term average harvest at 3.2 million pounds, the 1998/99 GHL in this area was reduced to 3.0 million pounds (D. Pengilly, ADF&G, Kodiak, personal communication).

The stations surveyed in 1997 were surveyed again in 2000. Tag recovery rates changed only slightly even though approximately one-third fewer crabs were tagged in 2000 than in 1997. Harvest rates as indicated by tag returns in the 2000/2001 season were similar to those in 1997/98. Shell-age composition data indicated the stock is healthy, while size composition of the retained catch has changed very little (Watson and Gish 2002).

Even though the harvest rates are at or near the allowable maximum in some areas, the Aleutian Islands golden king crab population is believed to be healthy. Portions of the stock occur at depths greater than those fished. Additionally, the area surveyed receives more fishing pressure than many other areas in the entire Aleutian Islands, so golden king crabs in other less heavily fished locales may have a lower harvest rate. In order to operate their gear more efficiently, fishers tend to utilize the shallowest waters in which crabs may be found in abundance. Distribution of legal males extends to depths greater than those fished, so the entire depth range distribution of legal males is not exploited. Recent fishery data also indicates that the stock is healthy. Average size of crabs harvested has remained nearly constant for the last six seasons. Average weight has been between 4.2 and 4.4 pounds per crab for the last eight years. Catch per unit of effort has also been stable and has been above the 10-year average during the last three seasons. All this information suggests that the 3.0 million-pound GHL has provided a stable fishery and protects against overfishing as defined in the FMP. Currently, the department intends to survey the area around Amukta and Yunaska Islands every three years, with the next survey scheduled for the summer of 2003.

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ALEUTIAN ISLANDS SCARLET KING CRAB

Historic Background

Scarlet king crabs *Lithodes couesi* are currently harvested under authority of a permit issued by the commissioner of ADF&G and authorized in **5 AAC 34.082. PERMITS FOR LITHODES COUESI KING CRAB**. These permits are usually issued in conjunction with an Aleutian Islands golden king crab registration. Scarlet king crabs are typically found in waters deeper than 200 fathoms and have been taken as incidental harvest in the golden king crab and deepwater Tanner crab fisheries in the Aleutian Islands. Limited directed fishing has occurred; however, exploratory fishing does not indicate that a large biomass is present. Since 1992, annual harvest of scarlet king crabs in the Aleutian Islands has ranged from less than 5,000 pounds to a peak of nearly 63,000 pounds in 1995, when eight vessels made 21 landings. Exvessel value was at a maximum in 1995 when the fishery was worth approximately \$110,000 (Table 4-8). Since 1996, effort and harvest in this fishery have been minimal and catch information has been confidential in all years except 1997 when 6,700 pounds were harvested. When BOF combined the Adak and Dutch Harbor king crab Registration Areas to create Area O, management of scarlet king crabs was not impacted (ADF&G 1999).

2001 Fishery

In 2001, only two vessels registered to fish for scarlet king crabs in the Aleutian Islands, thus all harvest information is confidential.

Fishery Management and Stock Status

There are no surveys conducted, nor are any estimates of population abundance made for scarlet king crabs in the Aleutian Islands; consequently, stock status and distribution are not well known. Scarlet king crab males larger than or equal to 5 ½ inches in CW may be taken as incidental harvest under the conditions of a commissioner's permit. No directed fishing for scarlet king crabs is anticipated prior to adoption of the Plan for the Development of New Fisheries in Alaska by the BOF. Future fisheries for scarlet king crabs would be conducted in accordance with the provisions of that plan. Observer coverage on each vessel registered for the king crab fisheries of the Aleutian Islands has provided biological information that will be used by the department to develop future management measures for scarlet king crab.

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EASTERN ALEUTIAN TANNER CRAB DISTRICT

Description of Area

The Eastern Aleutian Tanner crab District encompasses all waters of Registration Area J between the longitude of Scotch Cap Light at 164°44' W long., west to 172° W long., and south of the latitude of Cape Sarichef at 54°36' N lat. (Figure 4-8).

TANNER CRAB

Historic Background

The Eastern Aleutian District has not supported harvests of Tanner crabs *Chionoecetes bairdi* as large as those recorded in other districts of Area J. Tanner crabs are found only in a few major bays and inlets of the eastern Aleutians and the directed fishery was relatively small in volume and geographically limited until the late 1970s. The fishery began in Akutan and Unalaska Bays and subsequently expanded to include all areas of known Tanner crab distribution in the Eastern Aleutian District. Harvest of Tanner crabs over the last 26 years has typically remained under one million pounds per year. Only in the three consecutive seasons from 1976/1977 to 1978/1979 did the harvest exceed one million pounds, reaching a peak of 2.5 million pounds in

the 1977/1978 season. Vessel participation was low in 1973/74, with only six vessels registered and reached a high of 31 in 1982 when the fishery was in decline. Vessel participation declined in 1991 to five vessels and consequently the harvest reached a low of 50,038 pounds (Table 4-9). The Eastern Aleutian Islands Tanner crab fishery reached a maximum exvessel value of approximately \$950,000 in 1977/78 and 1989 (Table 4-10). Commercial fishing for Tanner crabs has not been permitted in the Eastern Aleutian District since 1994 due to low stock abundance.

Subsistence harvest limit reductions applied to the Eastern Aleutian Islands red king crab fishery in 1999 were not applied to Tanner crabs. However, the permit and reporting requirements for subsistence harvest were reinstated. Between 1988 and 1994, an average of 15 subsistence permits per year were returned and accounted for approximately 121 Tanner crabs annually. A survey of 15.1% of Unalaska households in 1994 generated an estimated total subsistence Tanner crab harvest of 10,957 crabs (ADF&G 1999a). ADF&G staff issued 179 subsistence permits in 1999, of which 80 were returned. Returned permits accounted for a Tanner crab harvest of 1,430 crabs and the estimated total harvest was 2,937 crabs (Table 4-3). The majority of Tanner crab harvest occurred in Illiuliuk and Captain's Bays. Tanner crab harvest peaked in early July and continued until the permits expired on January 31.

In 2000, out of the 192 subsistence permits and harvest logsheets issued, 56, or 29%, were returned. The returned permits accounted for a harvest of 467 Tanner crabs (Table 4-3). Estimates generated from the subsistence harvest logsheets indicate that approximately 1,800 Tanner crabs were taken and harvest ranged from 0 to 235 Tanner crabs per permit. The majority of Tanner crabs was taken in South Channel and Captain's Bay. Most of the Tanner crab harvest occurred prior to the end of July with peak catches occurring in June.

2001 Commercial Fishery

The Tanner crab fishery in the Eastern Aleutian District was not opened during the 2001 season due to low stock abundance.

2001 Subsistence Fishery

In 2001, ADF&G staff issued 199 subsistence permits and harvest logsheets, of which 100, or 50%, were returned. The returned permits accounted for a harvest of 720 Tanner crabs (Table 4-3). Estimates generated from the subsistence harvest logsheets indicate that approximately 1,440 Tanner crabs were taken and harvest ranged from 0 to 207 Tanner crabs per permit. The majority of Tanner crabs were taken adjacent to the landfill and in Unalaska Bay, with the greatest number harvested in June although catch continued throughout the year.

Fishery Management and Stock Status

Prior to 1990, sporadic pot surveys were utilized to generate a Tanner crab abundance index in the eastern Aleutian Islands (Urban 1992). The pot surveys were not utilized to generate a GHL; instead they were used to monitor trends in abundance and recruitment. Pot surveys and fishery data yielded harvest levels of 0 to 250,000 pounds (ADF&G 1983). Since 1990, trawl surveys

have been used to estimate abundance and are used in conjunction with fishery data for management purposes.

Trawl surveys in 1990 and 1991 indicated that a surplus of 100,000 pounds of Tanner crabs was available for harvest. Commercial fisheries that opened in 1991 and 1992 based on those surveys resulted in legal male harvest rates of approximately 33%. A 1994 trawl survey of the same location revealed an 87% decrease in abundance of Tanner crabs since 1991. Results of the 1994 survey prompted the department to issue an emergency order preventing the opening of the 1995 season (ADF&G 1999b). A trawl survey conducted by the department in 1995 indicated that the abundance of Tanner crabs had increased slightly over the 1994 level, but was still well below levels observed on the 1990 and 1991 surveys. The 1995 survey found an increase in juvenile male and immature female crabs. However, the abundance of legal male crabs was still very low (Urban 1996); thus, the fishery closure was extended.

A trawl survey conducted in 1999 indicated that the biomass of Tanner crabs in the eastern Aleutian Islands had increased. Abundance increases were recorded for all size classes, with females and large males showing the greatest change. Female abundance more than doubled from the 1995 survey estimate to 2.2 million crabs, and male crab abundance increased nearly four-fold to just over 4.0 million crabs of which approximately 0.4 million were legal size. The majority of the recruitment was observed in Akutan, Unalaska, and Makushin Bays (Worton 2000).

Because encouraging recruitment was noted during the 1999 trawl survey, the department surveyed the eastern Aleutian Islands again in 2000. Much of the recruitment observed in Akutan Bay in 1999 was not encountered in 2000; thus Tanner crab abundance declined (Worton 2001). The next trawl survey of the eastern Aleutian Islands is planned for the summer of 2003.

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GROOVED TANNER CRAB

Historic Background

In a manner similar to other deep-water crab fisheries in the Aleutian Islands, the first harvest of grooved Tanner crabs *Chionoecetes tanneri* in the Eastern Aleutian District occurred in the early 1980s as incidental harvest in the Dutch Harbor golden king crab fishery. Directed fishing for this species did not begin until 1993, when one vessel participated in a fishery that lasted from July until December. The grooved Tanner crab fishery in the Eastern Aleutian District typically occurred between March and December. Peak harvest in the Eastern Aleutian District occurred in 1995 when seven vessels landed approximately 850,000 pounds (Table 4-11).

Limited data has been collected regarding the abundance, distribution, and stock status of deep-water crab species in the Bering Sea and Aleutian Islands. During the 1993 season, the department utilized data collected by onboard observers to restrict harvest to males of five inches or greater CW. In 1994, pursuant to permit provisions described in **5 AAC 35.511. PERMITS FOR TANNERI AND ANGULATUS TANNER CRAB IN REGISTRATION AREA J**, the department required that vessels registered for this fishery carry an observer for all of their fishing activities. Data collected by observers has documented fishing practices, bycatch and has aided the department in developing further management measures.

In 1997, the department established GHLS for grooved Tanner crabs in the Eastern Aleutian, Bering Sea, and Alaska Peninsula Districts where most historical harvests had occurred. Harvest levels in this fishery were derived using catch information from previous seasons and data collected by onboard observers. A GHL of 200,000 pounds was established for each of the aforementioned areas, while smaller harvest levels of 100,000 pounds were established for the Kodiak and Western Aleutian areas to allow for exploratory fishing. In addition, the department required that all pots be equipped with at least two escape rings of 4.5 inches minimum diameter (ADF&G 1999).

2001 Fishery

Only one vessel registered to harvest grooved Tanner crabs in the Eastern Aleutian District during 2001. Consequently, all harvest information is confidential.

Fishery Management and Stock Status

The grooved Tanner crab population in the Eastern Aleutian District is not surveyed; consequently, no estimates of population abundance are available for this stock. Fishery data from the mid 1990s is the primary source of information regarding abundance and stock status. Catch per unit of effort declined from 15 legal crabs per pot lift in 1993 to 2 in 1996 and catches

decreased from over 850,000 pounds in 1995 to 106,000 pounds in 1996. In addition, fishing effort was concentrated in three statistical areas immediately to the south of Unalaska Island. This information indicates that at least in the area historically fished, the population was heavily exploited.

Given poor fishery performance and declining harvests of the mid 1990s, the department reevaluated deepwater Tanner crab harvest levels in 1999. A GHL range of 50,000 to 200,000 pounds was established for the eastern Aleutian Islands. The GHL was set as a range to provide greater flexibility for inseason management and to better inform the public of the department's management goals for the fishery. The fishery will be managed so that the upper end of the GHL range is reached only when catch rates similar to, or greater than those documented prior to the harvest declines of the mid 1990s are observed. In addition to new GHL requirements, the department specified that four 4.5 inch escape rings be placed on the lower third of each pot and required that pots be fished over multiple depth strata. Observers required on all vessels registered for the fishery will collect biological and fishery data.

Literature Cited

Alaska Department of Fish and Game (ADF&G). 1999. Annual management report for the shellfish fisheries of the Westward Region, 1998. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Informational Report 4K99-49, Kodiak.

TRIANGLE TANNER CRAB

Historic Background

In the Eastern Aleutian District triangle Tanner crab *Chionoecetes angulatus* are harvested under a permit authorized in **5 AAC 35.511. PERMITS FOR TANNERI AND ANGULATUS TANNER CRAB IN REGISTRATION AREA J**. Triangle Tanner crabs were incidental harvested in the Eastern Aleutian grooved Tanner crab fishery, where the species has occurred in small numbers. Prior to 1995 and the beginning of the directed fishery, no harvest of triangle Tanner crabs was reported on fish tickets; however shellfish observers stationed on board vessels participating in the grooved Tanner crab fishery observed small numbers of triangle crabs harvested in 1994 (ADF&G 1999). Two vessels targeted triangle Tanner crabs in the Eastern Aleutian District during the 1995 and 1996 seasons, thus harvest information from those fisheries is confidential (Table 4-12). From 1997 to 2000, no vessels have registered to harvest triangle Tanner crabs in the eastern Aleutian Islands.

2001 Fishery

Only one vessel registered to harvest triangle Tanner crabs in the Eastern Aleutian District during 2001, thus all harvest information is confidential.

Fishery Management and Stock Status

Surveys of population abundance are not conducted for triangle Tanner crabs; thus the status of this stock is unknown. Because of the paucity of population level data for this species and the history of the fishery, additional fishing for triangle Tanner crabs in the Eastern Aleutian District will be limited to incidental harvest during the grooved Tanner crab fishery. Vessels registered to fish for grooved Tanner crabs will be permitted to harvest triangle Tanner crabs at up to 50% of the weight of the target species. This harvest level is consistent with the historic development of the fishery and allows retention of a deepwater species that is believed to have high bycatch mortality.

Literature Cited

Alaska Department of Fish and Game (ADF&G). 1999. Annual management report for the shellfish fisheries of the Westward Region, 1998. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Informational Report 4K99-49, Kodiak.

WESTERN ALEUTIAN TANNER CRAB DISTRICT

Description of Area

The Western Aleutian District of Registration Area J includes all waters west of 172° W long., east of the U. S.-Russia Convention Line of 1867, and south of 54°36' N lat. (Figure 4-8).

TANNER CRAB

Historic Background

Harvest of Tanner crabs *Chionoecetes bairdi* from the Western Aleutian District has, in general, been incidental to the directed red king crab fishery in that area. Commercial harvest has ranged from a high of over 800,000 pounds during the 1981/82 season to less than 8,000 pounds in 1991/92. No commercial harvest of Tanner crabs has occurred in the Western Aleutian District since 1995/96 (Table 4-13). The Western Aleutian District Tanner crab fishery reached a maximum value of just over \$1 million in the 1981/82 season (Table 4-14). Tanner crab abundance in the Western Aleutian District is probably limited by available habitat. Most of the historical harvest occurred within a few bays in the vicinity of Adak and Atka Islands.

2001/2002 Fishery

The Western Aleutian District Tanner crab fishery has a regulatory opening date of November 1, however, the fishery was closed during the 2001/2002 season. The fishery was not opened because there is no BOF approved management plan in place, nor has sufficient population data been collected to develop a GHL.

Fishery Management and Stock Status

No stock assessment surveys are conducted for Tanner crabs in the Western Aleutian District; thus no population estimates are available. Stock status is currently unknown. Historic fisheries were managed using GHs set from commercial catch data (ADF&G 1985).

Literature Cited

Alaska Department of Fish and Game (ADF&G). 1985. Westward region Tanner crab survey results for 1985. Alaska Department of Fish and Game, Division of Commercial Fisheries, Kodiak.

GROOVED TANNER CRAB

Historic Background

In the Western Aleutian District, harvest of grooved Tanner crab first occurred in conjunction with the developing golden king crab fishery in the Adak King Crab Management Area during the late 1970s. Effort in this fishery has been minimal with two or fewer vessels participating during most years. Only in 1995 did significant fishing effort occur, when six vessels harvested approximately 146,000 pounds of grooved Tanner crabs (Table 4-15).

To prevent overharvest of this population where little abundance information is available, the ADF&G restricted harvest to males of five inches or greater CW in 1993. In addition, beginning in 1994, and according to provisions provided in **5 AAC 35.511 PERMITS FOR TANNER AND ANGULATUS TANNER CRAB IN REGISTRATION AREA J**, all vessels registered for the fishery were required to carry an onboard observer for all of their fishing activities. Using information collected by onboard observers and historic catch information, the department established GHs for grooved Tanner crabs in the Western Aleutian District in 1997. The GH was set at 100,000 pounds; this level was believed to be adequate to allow for exploratory fishing and incidental harvest (ADF&G 1999). Since 1997, the department has reevaluated harvest levels for deepwater Tanner crabs. Because commercial fishing for grooved Tanner crabs in the Western Aleutian District has only occurred during four seasons and no survey data is available, confidence was not as high in the GH for this district as in other districts where grooved Tanner crab harvest has occurred. In order to prevent overharvest of this stock, no GH was set in 1999 when new deepwater Tanner crab GHs were announced and the fishery will remain closed until further notice.

In addition to harvests of Tanner and grooved Tanner crab, fishers have anecdotally reported triangle Tanner crab harvest as incidental bycatch in the grooved Tanner crab and golden king crab fisheries in the Western Aleutian District. There have not been any landings of triangle Tanner crab from this area and there is currently no fishery.

2001 Fishery

The Western Aleutian District was not open to commercial fishing for grooved Tanner crabs in 2001.

Fishery Management and Stock Status

No stock assessment surveys have been conducted for grooved Tanner crabs in the Western Aleutian District; therefore, no estimates of population abundance are available. Fishery data from the mid 1990s indicates that the western Aleutian Islands may not support grooved Tanner crab populations as large as the eastern Aleutian Islands and the Bering Sea. Commercial fishery data from the mid 1990s indicates that neither catch nor catch per unit of effort were large when compared to those observed in other districts.

Literature Cited

Alaska Department of Fish and Game (ADF&G). 1999. Annual management report for the shellfish fisheries of the Westward Region, 1998. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Informational Report 4K99-49, Kodiak.

ALEUTIAN DISTRICT DUNGENESS CRAB

Description of Area

The Aleutian District Dungeness crab *Cancer magister* management area includes all waters of Registration Area J west of the longitude of Scotch Cap Light (164°44' W long.), south of the latitude of Cape Sarichef (54°36' N lat.), and east of the U.S.-Russia Convention Line of 1867 (Figure 4-9).

Historic Background

Islands in the Aleutian Chain are separated by deep passes with swift currents and are closely bordered on the north by the Aleutian Basin and south by the Aleutian Trench. Dungeness crabs inhabit bays, estuaries, and other shallow water habitats, areas that are sparse and widely dispersed in the Aleutian Islands. Therefore, populations of Dungeness crabs are small and fishing effort has been low within the district.

The Aleutian District Dungeness crab fishery has occurred primarily as a small-vessel, summer fishery in the vicinity of Unalaska Island. Some larger-vessel effort has occurred in other locales within the district, but fishing in these areas has been sporadic throughout the history of the fishery. Interest and activity in this fishery has been erratic from year to year, with the first reliable reports of harvest made in 1970. Since 1974, harvests have ranged from no landings, to a peak of over 91,000 pounds in 1984/85 (Table 4-16). Four boats fished that year, with over 80% of their catch coming from Unalaska and Makushin Bays. In addition to commercial harvest,

Dungeness crabs have also been taken in subsistence and sport fisheries occurring in the vicinity of Unalaska Island. Subsistence harvest reports returned to ADF&G between 1988 and 1994 indicate that Dungeness harvests were larger than those documented for both red king *Paralithodes camtschaticus* and Tanner *Chionoecetes bairdi* crabs. On average, 15 harvest reports were returned per year and Dungeness harvest averaged 686 crabs with a range of 5 to 1,906 crabs per family (ADF&G 1999). No estimate of current Dungeness harvest by sport or subsistence users is available, but it is believed to be small.

2001/2002 Fishery

The 2001/2002 Aleutian District Dungeness crab fishery opened by regulation at 12:00 noon on May 1, 2001, and closed by regulation at 12:00 noon on January 1, 2002. Only one vessel registered for the fishery, thus all harvest information is confidential.

Fishery Management and Stock Status

The Aleutian Islands Dungeness crab fishery has been managed using size, sex, and season restrictions. Only male Dungeness crabs six and one-half inches (165 mm) or greater in carapace width may be retained in the Aleutian District from 12:00 noon May 1 to 12:00 noon January 1. No stock assessment work has been performed and limited biological and fishery data have been collected through dockside sampling. The status of this species in the Aleutian Islands is unknown, but the resource is believed to be limited due to the lack of suitable habitat.

Literature Cited

Alaska Department of Fish and Game (ADF&G). 1999. Customary and traditional use worksheet for marine invertebrates, including king and Tanner crab: Alaska Peninsula-Aleutian Islands Area in Westward Region Report to the Alaska Board of Fisheries 1999, Kodiak.

ALEUTIAN DISTRICT SHRIMP

Description of Area

The Aleutian District of Registration Area J, as described for shrimp, includes all Bering Sea and Pacific Ocean waters west of the longitude of Cape Sarichef at 164°55' W long. and east of the U.S.-Russia Convention Line of 1867 (Figure 4-10). The Aleutian District includes four sections: Unalaska Bay, Makushin Bay, Usof Bay, and Beaver Inlet.

Historic Background

Commercial fishing for shrimp in the Aleutian District began in the 1960s with Russian and Japanese participation. Most harvests occurred northwest of the Pribilof Islands, with some harvests as large as 30,000 metric ton per year. In 1972 a domestic trawl fishery began targeting

northern shrimp *Pandalus borealis* in the vicinity of Unalaska Island. Catch and effort increased and harvest peaked in 1977/78 at 6.8 million pounds. Sharp declines in catches after 1978 led to a reduction in season length. Between 1983 and 1992 no fishing occurred; however, in 1992 four catcher-processors targeted shrimp northwest of the Pribilof Islands. Low concentrations of shrimp were located and all four vessels departed the fishery after making a total of six landings for 72,133 pounds (Table 4-17). Since 1992, interest in fishing for shrimp in the Aleutian District has remained at a very low level. Prior to 1999, several vessels registered to fish, but made no landings. In 1999, the first commercial harvest of shrimp in the Aleutian District occurred since 1992. Only two vessels registered for the fishery; therefore, catch information is confidential. Initial catches were composed primarily of northern shrimp. As the fishery progressed, sidestripe shrimp *Pandalopsis dispar* became the dominant species in the catch. The fishery was closed on July 9 because ADF&G did not possess adequate information regarding the abundance and distribution of these species and it was not possible to prosecute the fishery in accordance with 5 AAC 39.210. MANAGEMENT PLAN FOR HIGH IMPACT EMERGING FISHERIES as outlined in the Commercial Shellfish Fishing Regulations Booklet (CSFRB).

2001 Fishery

The 2001 fishery did not open because there was insufficient information on shrimp stock abundance and distribution.

Fishery Management and Stock Status

The ADF&G has obtained limited population information for the shrimp stocks of the Aleutian Islands. The last extensive commercial activity occurred in the 1970s and stock assessment surveys conducted by ADF&G and NMFS do not specifically target shrimp or cover much of the important shrimp habitat areas. Consequently, ADF&G does not possess adequate information to develop a management plan or conduct a commercial fishery. Fishers have expressed interest in collaborating with ADF&G on a stock assessment survey, but funding constraints have limited such endeavors. Once BOF has adopted the Plan for the Development of New Fisheries in Alaska, a collaborative survey trip may be one step in the creation of a sustainable, well-managed fishery. In 2000, NMFS performed a pilot deep-sea trawl survey of the continental slope. Sidestripe shrimp was the most abundant shrimp species, found primarily on the continental slope east of Zhemchug Canyon at an average depth of 214 fathoms. Although information obtained on shrimp was sparse, NMFS has plans to conduct the surveys biannually, which may provide more detailed data on shrimp abundance, distribution, and habitat usage.

ALEUTIAN DISTRICT MISCELLANEOUS SHELLFISH SPECIES

Description of Area

The Aleutian district of Registration Area J, as described for miscellaneous shellfish, includes all waters south of the latitude of Cape Sarichef (54°36' N lat.), west of the longitude of Scotch Cap Light (164°44' W long.), and east of the U.S.-Russia Convention Line of 1867 (Figure 4-11).

Introduction

Shellfish species included in this section are those which have been harvested in relatively small amounts compared to the commercial king and Tanner crab fisheries which occur in the Aleutian Islands. Miscellaneous shellfish species include hair crabs, sea urchins, sea cucumbers, snails, *Paralomis multispina* crab, and octopi. Prior to 1999, it was the policy of ADF&G to register vessels for exploratory fishing in these new and emerging fisheries under authority of a commissioner's permit described in 5 AAC 38.062. PERMITS FOR OCTOPI, SQUID, KOREAN HAIR CRAB, SEA URCHINS, SEA CUCUMBERS, SEA SNAILS, CORAL, AND OTHER MARINE INVERTEBRATES as stated in the CSFRB. Typically, permit conditions were general and not fully developed on an individual species basis. Fisheries for these species were conducted without prior knowledge of stock abundance or distribution and no harvest limits were established. To allow for the orderly development and regulation of expanding fisheries, BOF adopted 5 AAC 39.210. MANAGEMENT PLAN FOR HIGH IMPACT EMERGING FISHERIES, which delineated criteria that must be met in order for a new fishery to occur. In addition, BOF will be considering a Plan for the Development of New Fisheries that will provide a framework to be employed by resource harvesters in the development of new fisheries.

2001 Fisheries

Octopus

Currently, directed fishing for octopi is not permitted in the Aleutian district. Incidental harvest may be retained on a miscellaneous finfish card at up to 20% of the weight of the target species. In 2001, out of the 128 vessels registered for incidental harvest, 25 made 51 landings of octopi totaling 13,097 pounds from the Aleutian Islands (Table 4-18). At-sea discards totaled 41,185 pounds. The majority of retained octopi were utilized for bait (80%), while the rest was sold to processors as live product (20%). Octopus landings were made by vessels targeting Pacific cod or other groundfish species using pot gear (99%) and trawl gear (1%).

Sea Cucumber and Sea Urchin

In September, ADF&G issued a news release announcing the GHL for sea cucumbers and sea urchins in the Westward Region. The 2001 season opened under a commissioner's permit with a GHL of 5,000 pounds each, eviscerated product for sea cucumbers and whole animal weight for sea urchins. The small GHLs were established to permit conservative commercial exploration of areas that lacked historic harvest data and to allow ADF&G to collect critical information for future management purposes. However, no vessels or divers registered or fished for either of these fisheries in the Aleutian Islands District in 2001.

Other Miscellaneous Shellfish Species

No vessels were registered for any other miscellaneous shellfish species in the Aleutian Islands District in 2001.

Fishery Management and Stock Status

No surveys of abundance targeting octopi have been performed in the Aleutian Islands; thus, no population data is available. In addition, ADF&G has not developed a management plan for this species. Future harvests, if any, will be conducted as incidental harvest limited to 20% of the weight of the target species. Stock assessment work has not been performed for other miscellaneous shellfish species in the Aleutian Islands and until such work has been performed and a BOF approved management plan has been adopted, only limited fisheries for these species will be allowed.

Table 4-1. Aleutian Islands, Area O, red king crab commercial fishery data, 1960/1961 - 2001/2002.

Season	Locale	Number of		Crabs ^b	Harvest ^{b,c}	Pots Lifted	CPUE ^d	Average		Deadloss ^c
		Vessels ^a	Landings					Weight ^c	Length ^e	
1960/61	East of 172°	NA	NA	NA	NA	NA	NA	NA	NA	NA
	West of 172°	4	41	NA	2,074,000	NA	NA	NA	NA	NA
	TOTAL									
1961/62	East of 172°	4	69	NA	533,000	NA	NA	NA	NA	NA
	West of 172°	8	218	NA	6,114,000	NA	NA	NA	NA	NA
	TOTAL		287		6,647,000					
1962/63	East of 172°	6	102	NA	1,536,000	NA	NA	NA	NA	NA
	West of 172°	9	248	NA	8,006,000	NA	NA	NA	NA	NA
	TOTAL		350		9,542,000					
1963/64	East of 172°	4	242	NA	3,893,000	NA	NA	NA	NA	NA
	West of 172°	11	527	NA	17,904,000	NA	NA	NA	NA	NA
	TOTAL		769		21,797,000					
1964/65	East of 172°	12	336	NA	13,761,000	NA	NA	NA	NA	NA
	West of 172°	18	442	NA	21,193,000	NA	NA	NA	NA	NA
	TOTAL		778		34,954,000					
1965/66	East of 172°	21	555	NA	19,196,000	NA	NA	NA	NA	NA
	West of 172°	10	431	NA	12,915,000	NA	NA	NA	NA	NA
	TOTAL		986		32,111,000					
1966/67	East of 172°	27	893	NA	32,852,000	NA	NA	NA	NA	NA
	West of 172°	10	90	NA	5,883,000	NA	NA	NA	NA	NA
	TOTAL		983		38,735,000					

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Table 4-1. (Page 2 of 6)

Season	Locale	Number of			Harvest ^{b,c}	Pots Lifted	CPUE ^d	Average		Deadloss ^c
		Vessels ^a	Landings	Crabs ^b				Weight ^c	Length ^e	
1967/68	East of 172°	34	747	NA	22,709,000	NA	NA	NA	NA	NA
	West of 172°	22	505	NA	14,131,000	NA	NA	NA	NA	NA
	TOTAL		1,252		36,840,000					
1968/69	East of 172°	NA	NA	NA	11,300,000	NA	NA	NA	NA	NA
	West of 172°	30	NA	NA	16,100,000	NA	NA	NA	NA	NA
	TOTAL				27,400,000					
1969/70	East of 172°	41	375	NA	8,950,000	72,683	NA	NA	NA	NA
	West of 172°	33	435	NA	18,016,000	115,929	NA	6.5	NA	NA
	TOTAL		810		26,966,000	188,612				
1970/71	East of 172°	32	268	NA	9,652,000	56,198	NA	NA	NA	NA
	West of 172°	35	378	NA	16,057,000	124,235	NA	NA	NA	NA
	TOTAL		646		25,709,000	180,433				
1971/72	East of 172°	32	210	1,447,692	9,391,615	31,531	46	7	NA	NA
	West of 172°	40	166	NA	15,475,940	46,011	NA	NA	NA	NA
	TOTAL		376		24,867,555	77,542				
1972/73	East of 172°	51	291	1,500,904	10,450,380	34,037	44	7		
	West of 172°	43	313	3,461,025	18,724,140	81,133	43	5.4	NA	NA
	TOTAL		604	4,961,929	29,174,520	115,170	43	5.9		
1973/74	East of 172°	56	290	1,780,673	12,722,660	41,840	43	7.1	NA	NA
	West of 172°	41	239	1,844,974	9,741,464	70,059	26	5.3	148.6	NA
	TOTAL		529	3,625,647	22,464,124	111,899	32	6.2		

-Continued-

Table 4-1. (Page 3 of 6)

Season	Locale	Number of			Harvest ^{b,c}	Pots Lifted	CPUE ^d	Average		Deadloss ^c
		Vessels ^a	Landings	Crabs ^b				Weight ^c	Length ^e	
1974/75	East of 172°	87	372	1,812,647	13,991,190	71,821	25	7.7		
	West of 172°	36	97	532,298	2,774,963	32,620	16	5.2	148.6	NA
	TOTAL		469	2,344,945	16,766,153	104,441	22	7.1		
1975/76	East of 172°	79	369	2,147,350	15,906,660	86,874	25	7.4		
	West of 172°	20	25	79,977	411,583	8,331	10	5.2	147.2	NA
	TOTAL		394	2,227,327	16,318,243	95,205	23	7.3		
1976/77	East of 172°	72	226	1,273,298	9,367,965	65,796	19	7.4		
	East of 172°	38	61	86,619	830,458	17,298	5	9.6	NA	NA
	West of 172°				F I S H E R Y C L O S E D					
	TOTAL		287	1,359,917	10,198,423	83,094	16	7.5		
1977/78	East of 172°	33	227	539,656	3,658,860	46,617	12	6.8		
	East of 172°	6	7	3,096	25,557	812	4	8.3	NA	NA
	West of 172°	12	18	160,343	905,527	7,269	22	5.7	152.2	NA
	TOTAL		252	703,095	4,589,944	54,698	13	6.5		
1978/79	East of 172°	60	300	1,233,758	6,824,793	51,783	24	5.5	NA	NA
	West of 172°	13	27	149,491	807,195	13,948	11	5.4	NA	1,170
	TOTAL		327	1,383,249	7,631,988	65,731	21	5.5		
1979/80	East of 172°	104	542	2,551,116	15,010,840	120,554	21	5.9	NA	NA
	West of 172°	18	23	82,250	467,229	9,757	8	5.7	152	24,850
	TOTAL		565	2,633,366	15,478,069	130,311	20	5.9		
1980/81	East of 172°	114	830	2,772,287	17,660,620	231,607	12	6.4	NA	NA
	East of 172°	54	120	182,349	1,392,923	30,000	6	7.6		
	West of 172°	17	52	254,390	1,419,513	20,914	12	5.6	149	54,360
	TOTAL		1,002	3,209,026	20,473,056	282,521	11	6.4		

-Continued-

Table 4-1. (Page 4 of 6)

Season	Locale	Number of			Harvest ^{b,c}	Pots Lifted	CPUE ^d	Average		Deadloss ^c
		Vessels ^a	Landings	Crabs ^b				Weight ^c	Length ^e	
1981/82	East of 172°	92	683	741,966	5,155,345	220,087	3	6.9	NA	NA
	West of 172°	46	106	291,311	1,648,926	40,697	7	5.7	148.3	8,759
	TOTAL		789	1,033,277	6,804,271	260,784	4	6.6		
1982/83	East of 172°	81	278	64,380	431,179	72,924	1	6.7		
	West of 172°	72	191	284,787	1,701,818	66,893	4	6.0	150.8	7,855
	TOTAL		469	349,167	2,132,997	139,817	3	6.1		
1983/84	East of 172°				FISHERY CLOSED					
	West of 172°	106	248	298,948	1,981,579	60,840	5	6.6	157.3	3,833
	TOTAL	106	248	298,948	1,981,579	60,840	5	6.6	157.3	3,833
1984/85	East of 171°				FISHERY CLOSED					
	West of 171°	64	113	206,751	1,367,672	50,685	4	6.6	155.1	0
	TOTAL	64	113	206,751	1,367,672	50,685	4	6.6	155.1	0
1985/86	East of 171°				FISHERY CLOSED					
	West of 171°	35	89	162,271	906,293	32,478	5	5.6	152.2	6,120
	TOTAL	35	89	162,271	906,293	32,478	5	5.6	152.2	6,120
1986/87	East of 171°				FISHERY CLOSED					
	West of 171°	33	69	126,146	712,243	29,189	4	5.6	NA	500
	TOTAL	33	69	126,146	712,243	29,189	4	5.6	NA	501
1987/88	East of 171°				FISHERY CLOSED					
	West of 171°	71	109	211,712	1,213,933	43,433	5	5.7	148.5	6,900
	TOTAL	71	109	211,712	1,213,933	43,433	5	5.7	148.5	6,900
1988/89	East of 171°				FISHERY CLOSED					
	West of 171°	73	156	266,053	1,567,314	64,374	4	5.9	153.1	557
	TOTAL	73	156	266,053	1,567,314	64,374	4	5.9	153.1	557

-Continued-

Table 4-1. (Page 5 of 6)

Season	Locale	Number of			Harvest ^{b,c}	Pots Lifted	CPUE ^d	Average		Deadloss ^c
		Vessels ^a	Landings	Crabs ^b				Weight ^c	Length ^e	
1989/90	East of 171°				FISHERY CLOSED					
	West of 171°	56	123	196,070	1,118,566	54,513	4	5.7	151.5	759
	TOTAL	56	123	196,070	1,118,566	54,513	4	5.7	151.5	759
1990/91	East of 171°				FISHERY CLOSED					
	West of 171°	7	34	146,903	828,105	10,674	14	5.6	148.1	0
	TOTAL	7	34	146,903	828,105	10,674	14	5.6	148.1	0
1991/92	East of 171°				FISHERY CLOSED					
	West of 171°	10	35	165,356	951,278	16,636	10	5.7	149.8	0
	TOTAL	10	35	165,356	951,278	16,636	10	5.7	149.8	0
1992/93	East of 171°				FISHERY CLOSED					
	West of 171°	12	30	218,049	1,286,424	16,129	13	6.0	151.5	5,000
	TOTAL	12	30	218,049	1,286,424	16,129	13	6.0	151.5	5,000
1993/94	East of 171°				FISHERY CLOSED					
	West of 171°	12	21	119,330	698,077	13,575	9	5.8	154.6	7,402
	TOTAL	12	21	119,330	698,077	13,575	9	5.8	154.6	7,402
1994/95	East of 171°				FISHERY CLOSED					
	West of 171°	20	31	30,337	196,967	18,146	2	6.5	157.5	1,430
	TOTAL	20	31	30,337	196,967	18,146	2	6.5	157.5	1,430
1995/96	East of 171°				FISHERY CLOSED					
	West of 171°	4	12	6,880	38,941	2,205	3	5.7	153.6	235
	TOTAL	4	12	6,880	38,941	2,205	3	5.7	153.6	235
1996/97					FISHERY CLOSED					
1997/98					FISHERY CLOSED					
1998/99	West of 174°	3	6	749	5,900	102	7	7.9		0

-Continued-

Table 4-1. (Page 6 of 6)

Season	Locale	Number of			Harvest ^{b,c}	Pots Lifted	CPUE ^d	Average		Deadloss ^c
		Vessels ^a	Landings	Crabs ^b				Weight ^c	Length ^e	
1999/2000					F I S H E R Y C L O S E D					
2000/2001 ^f	West of 174°	1	3	11,257	76,792	498	23	6.8		0
2001/2002 ^g	West of 174°	4	5	22,080	153,961	700	32	7.0		82

^aMany vessels fished both east and west of 171W, thus total number of vessels reflects registrations for entire Aleutian Islands.

^bDeadloss included.

^cIn pounds.

^dNumber of legal crabs per pot lift.

^eIn millimeters.

^fJanuary/February Petrel Bank survey (fish ticket harvest code 15).

^gNovember Petrel Bank survey (fish ticket harvest code 15).

Table 4-2. Aleutian Islands, Area O, red king crab fishery economic performance data, 1973/74-2001/02. No economic data available prior to 1973.

Season		Exvessel Price Per Pound	Season Total
1973/74	East of 172°	\$0.65	\$8,269,729
	West of 172°	NA	NA
	TOTAL		
1974/75	East of 172°	\$0.37	\$5,176,740
	West of 172°	NA	NA
	TOTAL		
1975/76	East of 172°	\$0.42	\$6,680,797
	West of 172°	NA	NA
	TOTAL		
1976/77	East of 172°	\$0.64	\$5,995,497
	East of 172°	\$0.79	\$656,061
	West of 172°		
	TOTAL		
1977/78	East of 172°	\$0.99	\$3,622,271
	East of 172°	\$1.35	\$34,502
	West of 172°	NA	NA
	TOTAL		
1978/79	East of 172°	\$1.35	\$9,213,471
	West of 172°	NA	NA
	TOTAL		
1979/80	East of 172°	\$0.90	\$13,509,756
	West of 172°	NA	NA
	TOTAL		
1980/81	East of 172°	\$1.02	\$18,013,832
	East of 172°	\$1.03	\$1,434,711
	West of 172°	NA	NA
	TOTAL		
1981/82	East of 172°	\$2.30	\$11,617,293
	West of 172°	NA	NA
	TOTAL		
1982/83	East of 172°	\$3.43	\$1,478,944
	West of 172°	NA	NA
	TOTAL		
1984 TO 1995 NO ECONOMIC DATA AVAILABLE			
1996/97 - 1997/98		FISHERY CLOSED	
1998/99	West of 174°	CONFIDENTIAL	
1999/2000 - 2001/02		FISHERY CLOSED	

Table 4-3. Eastern Aleutian Islands subsistence king and Tanner crab harvest, 1999-2001.

Year	Number of Permits Issued	Number of Permits Returned	Percentage Returned	Harvest ^a			
				King Crab Reported	King Crab Estimated	Tanner crab Reported	Tanner crab Estimated
1999	179	80	44.7	786	1,434	1,430	2,937
2000	192	56	29.2	314	1,124	467	1,800
2001	199	100	50.2	675	1,350	720	1,440

^aHarvest estimate from 164°44'W long. to 168°W long.

Table 4-4. Aleutian Islands golden king crab commercial fishery data, 1981/82-2000/2001 seasons.

Season	Locale	Number of			Harvest ^{b,c}	Number of Pots		CPUE ^d	Average		
		Vessels ^a	Landings	Crabs ^b		Registered	Lifted		Weight ^c	Length ^e	Deadloss ^c
1981/82	East of 172° W.	6	16	22,666	115,715	0	2,906	8	5.1	158	8,752
	West of 172° W.	14	76	217,700	1,194,046	2,647	24,627	9	5.5	160	22,064
	TOTAL		92	240,458	1,319,761	2,647	27,533	9	5.4		30,816
1982/83	East of 172° W.	49	136	227,471	1,184,971	NA	29,369	8	5.2	158	47,479
	West of 172° W.	99	501	1,509,001	8,006,274	13,111	150,103	10	5.3	158	220,743
	TOTAL		637	1,737,109	9,191,245	13,111	179,472	10	5.3		268,222
1983/84	East of 172° W.	47	132	238,353	1,810,973	4,514	29,595	8	7.6	NA	45,268
	West of 172° W.	157	1,002	1,534,909	8,128,029	17,406	226,798	7	5.3	NA	171,021
	TOTAL		1,134	1,773,262	9,939,002	21,920	256,393	7	5.6		186,289
1984/85	East of 171° W.	13	67	327,440	1,521,142	1,394	24,044	14	4.6	161	70,362
	West of 171° W.	38	85	643,597	3,180,095	5,270	64,777	10	4.9	157	125,073
	TOTAL		152	971,274	4,701,237	6,664	88,821	11	4.8		195,435
1985/86	East of 171° W.	13	67	410,977	1,968,213	1,479	34,287	12	4.7	156	38,663
	West of 171° W.	49	386	2,052,048	11,124,759	7,057	202,401	10	5.4	151	5,304
	TOTAL		453	2,463,025	13,092,972	8,536	236,688	10	5.3		43,967
1986/87	East of 171° W.	17	71	400,389	1,869,180	1,575	37,585	11	4.7	NA	9,510
	West of 171° W.	62	525	2,923,947	12,798,004	12,958	392,185	7	4.4	150	276,736
	TOTAL		596	3,324,336	14,667,184	14,533	429,770	8	4.4		286,246
1987/88	East of 171° W.	22	77	299,734	1,383,198	3,591	43,017	7	4.6	150	24,210
	West of 171° W.	46	386	1,908,989	8,001,177	10,687	267,705	7	4.2	147	165,415
	TOTAL		463	2,208,723	9,324,375	14,278	310,722	7	4.2		189,625

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Table 4-4. (Page 2 of 3)

Season	Locale	Number of		Crabs ^b	Harvest ^{b,c}	Number of Pots		CPUE ^d	Weight ^c	Average	Deadloss ^c
		Vessels ^a	Landings			Registered	Lifted			Carapace length ^e	
1988/89	East of 171° W.	21	57	323,695	1,545,113	4,215	40,869	8	4.8	154	22,960
	West of 171° W.	74	455	2,165,508	9,080,196	23,627	280,732	8	4.2	149	122,251
	TOTAL		512	2,489,203	10,625,309	27,842	321,604	8	4.3		145,211
1989/90	East of 171° W.	13	70	424,067	1,852,249	5,635	43,345	10	4.4	151	17,421
	West of 171° W.	64	505	2,520,786	10,162,400	14,724	324,153	8	4.0	149	100,724
	TOTAL		575	2,944,853	12,014,649	20,359	367,498	8	4.1		118,145
1990/91	East of 171° W.	16	58	384,885	1,718,848	5,225	54,618	7	4.3	148	42,800
	West of 171° W.	13	167	1,312,116	5,250,687	7,380	160,960	8	4.0	145	176,583
	TOTAL	24	235	1,697,001	6,969,535	12,605	214,578	8	4.1		219,383
1991/92	East of 171° W.	11	50	335,647	1,447,732	3,760	40,604	8	4.3	148	45,100
	West of 171° W.	16	206	1,511,751	6,254,409	7,635	192,949	8	4.1	145	96,848
	TOTAL	20	256	1,847,398	7,702,141	11,395	233,553	8	4.2		141,948
1992/93	East of 171° W.	10	44	330,159	1,375,048	4,222	37,718	9	4.1	148	37,200
	West of 171° W.	18	130	1,198,169	4,916,149	8,236	165,503	7	4.1	147	104,215
	TOTAL	22	174	1,528,328	6,291,197	12,458	203,221	8	4.1		141,415
1993/94	East of 171° W.	4	14	217,788	915,460	2,334	22,490	10	4.2	149	7,324
	West of 171° W.	21	147	1,102,541	4,635,683	11,970	212,164	5	4.2	148	165,358
	TOTAL	21	161	1,320,329	5,551,143	14,304	234,654	6	4.2		172,682
1994/95	East of 171° W.	14	45	384,353	1,750,267	7,378	67,537	6	4.6	148	29,908
	West of 171° W.	34	247	1,539,866	6,378,030	15,604	319,006	5	4.1	150	242,065
	TOTAL	35	292	1,924,219	8,128,297	22,982	386,543	5	4.2		271,973

-Continued-

Table 4-4. (Page 3 of 3)

Season	Locale	Number of			Harvest ^{b,c}	Number of Pots		CPUE ^d	Average		
		Vessels ^a	Landings	Crabs ^b		Registered	Lifted		Weight ^c	Carapace length ^e	Deadloss ^c
1995/96	East of 171° W.	17	42	431,867	1,993,980	10,325	65,030	7	4.6	150	14,676
	West of 171° W.	25	139	1,134,274	4,896,926	14,213	226,463	5	4.2	147	338,223
	TOTAL	28	181	1,566,141	6,890,906	24,538	291,493	5	4.4		352,899
1996/97	East of 174° W.	14	70	725,452	3,262,516	NA	113,460	6	4.5		156,857
	West of 174° W.	13	100	618,498	2,591,720	NA	100,340	6	4.2		78,973
	TOTAL	18	170	1,343,950	5,854,236	11,080	213,800	6	4.4	147	235,830
1997/98	East of 174° W.	13	74	780,609	3,501,054	10,100	106,403	7	4.5	147	131,480
	West of 174° W.	8	160	569,550	2,444,628	4,690	86,811	7	4.3	148	79,525
	TOTAL	15	234	1,350,159	5,945,682	10,100	193,214	7	4.4	147	211,005
1998/99	East of 174° W.	14	55	740,011	3,247,863	8,365	83,378	9	4.4	148	82,113
	West of 174° W.	3	44	409,531	1,691,385	1,930	35,920	12	4.1	146	21,218
	TOTAL	16	99	1,149,542	4,939,248	10,295	119,298	10	4.3	147	103,331
1999/00	East of 174° W.	16	60	709,332	3,069,886	9,514	79,129	9	4.3	147	67,574
	West of 174° W.	15	113	676,558	2,768,902	10,564	101,040	7	4.1	147	104,675
	TOTAL	17	173	1,385,890	5,838,788	20,078	180,169	8	4.2	147	172,249
2000/01	East of 174° W.	15	50	704,702	3,134,079	9,703	71,551	10	4.5	147	55,999
	West of 174° W.	12	100	705,613	2,884,682	8,910	101,239	7	4.1	145	53,158
	TOTAL	17	150	1,410,315	6,018,761	18,613	172,790	8	4.3	146	109,157

^aMany vessels fished both east and west of 174W, thus total number of vessels reflects registrations for entire Aleutian Islands.

^bDeadloss included.

^cIn pounds.

^dNumber of legal crabs per pot lift.

^eIn millimeters.

Table 4-5. Aleutian Islands golden king crab fishery economic performance data, 1981/82-2000/2001 seasons.

Year		Value		Season Length	
		Exvessel ^a	Total ^b	Days	Dates
1981/82	East of 172° W.	\$2.05	\$0.22	75	11/01-01/15
	West of 172° W.	\$2.06	\$2.41	227	11/01-06/15
	Total	\$2.06	\$2.63		
1982/83	East of 172° W.	\$3.00	\$3.41	105	11/01-02/15
	West of 172° W.	\$3.01	\$23.43	166	11/01-04/15
	Total	\$3.01	\$26.85		
1983/84	East of 172° W.	\$3.05	\$5.38	105	11/01-02/15
	West of 172° W.	\$2.92	\$23.23	157	11/10-04/15
	Total	\$2.94	\$28.62		
1984/85	East of 171° W.	\$1.35	\$1.96	229	07/01-02/15
	West of 171° W.	\$2.00	\$6.11	240	11/10-07/08
	Total	\$1.79	\$8.07		
1985/86	East of 171° W.	\$2.00	\$3.86	121	07/01-10/31
	West of 171° W.	\$2.50	\$27.80	288	11/01-08/15
	Total	\$2.43	\$31.66		
1986/87	East of 171° W.	\$2.85	\$5.30	182	07/01-12/31
	West of 171° W.	\$3.00	\$37.56	288	11/01-08/15
	Total	\$2.98	\$42.86		
1987/88	East of 171° W.	\$2.85	\$3.87	62	07/01-09/02
	West of 171° W.	\$3.00	\$23.51	289	11/01-08/15
	Total	\$2.98	\$27.38		
1988/89	East of 171° W.	\$3.00	\$4.57	93	09/01-12/04
	West of 171° W.	\$3.20	\$28.66	288	11/01-08/15
	Total	\$3.17	\$33.23		
1989/90	East of 171° W.	\$3.50	\$6.42	104	09/01-12/15
	West of 171° W.	\$3.00	\$30.18	288	11/01-08/15
	Total	\$3.08	\$36.61		
1990/91	East of 171° W.	\$3.00	\$5.03	68	09/01-11/09
	West of 171° W.	\$3.00	\$15.22	288	11/01-08/15
	Total	\$3.00	\$20.25		
1991/92	East of 171° W.	\$2.00	\$2.81	74	09/01-11/15
	West of 171° W.	\$2.50	\$15.39	289	11/01-08/15
	Total	\$2.41	\$18.20		

-Continued-

Table 4-5. (Page 2 of 2)

Year		Value		Season Length	
		Exvessel ^a	Total ^b	Days	Dates
1992/93	East of 171° W.	\$2.50	\$3.30	76	09/01-11/17
	West of 171° W.	\$2.05	\$9.86	288	11/01-08/15
	Total	\$2.15	\$13.16		
1993/94	East of 171° W.	\$2.15	\$1.95	212	09/01-03/31
	West of 171° W.	\$2.50	\$11.18	288	11/01-08/15
	Total	\$2.44	\$13.13		
1994/95	East of 171° W.	\$4.00	\$6.88	57	09/01-10/28
	West of 171° W.	\$3.33	\$20.43	288	11/01-08/15
	Total	\$3.48	\$27.31		
1995/96	East of 171° W.	\$2.60	\$5.15	38	09/01-10/09
	West of 171° W.	\$2.10	\$9.57	289	11/01-08/15
	Total	\$2.25	\$14.72		
1996/97	East of 174° W.	\$2.23	\$6.93	115	09/01-12/25
	West of 174° W.	\$2.23	\$5.60	365	09/01-08/31
	Total	\$2.23	\$12.53		
1997/98	East of 174° W.	\$2.25	\$7.58	84	09/01-11/24
	West of 174° W.	\$2.10	\$4.96	365	09/01-08/31
	Total	\$2.19	\$12.54		
1998/99	East of 174° W.	\$1.87	\$5.92	68	09/01-11/07
	West of 174° W.	\$2.04	\$3.41	365	09/01-08/31
	Total	\$1.92	\$9.33		
1999/00	East of 174° W.	\$3.26	\$9.78	55	09/01-10/25
	West of 174° W.	\$3.09	\$8.23	348	09/01-8/14
	Total	\$3.15	\$18.01		
2000/01	East of 174° W.	\$3.50	\$10.77	40	08/15-09/24
	West of 174° W.	\$3.09	\$8.75	286	08/15-05/28
	Total	\$3.33	\$19.52		

^aAverage price per pound.^bIn millions of dollars.

Table 4-6. Aleutian Islands golden king crab catch by statistical area, 2000/2001 season.

Locale	Statistical area	Number of		Harvest ^{a,b}	Pots lifted	Average		
		Landings	Crab ^a			CPUE ^c	Weight ^b	Deadloss ^b
Islands of Four Mts.	695232	8	27,645	126,852	3,104	9	4.6	1,496
	695301	10	24,813	117,044	2,574	10	4.7	1007
	705200	12	36,643	160,837	4,755	8	4.4	2,442
Yunaska Island	705232	17	133,187	579,544	13,748	10	4.4	8,768
	705300	11	34,384	147,844	3,188	11	4.3	2,888
Amukta Pass	715130	7	11,905	54,530	688	18	4.6	1,052
	715202	14	80,286	353,167	7,928	10	4.4	3,483
	715231	14	59,836	239,679	6,819	9	4.0	4,085
	715232	6	30,921	128,261	2,302	14	4.2	1,915
Seguam Pass	725201	15	139,319	647,275	8,604	16	4.7	12,146
	725230	11	27,231	127,209	2,993	9	4.7	3,922
	735201	5	18,150	84,379	3,560	5	4.7	3,612
Amlia Island	745206	6	1,736	8,183	1,006	2	4.7	306
	755201	13	6,766	30,496	1697	4	4.5	711
	755202	7	2361	11,144	730	3	4.7	189
	765144	12	3670	15,552	687	5	4.2	73
Adak Island	765204	6	1,147	4,684	407	3	4.1	77
Kanaga Island	775100	4	1,376	5,575	158	9	4.1	36
	775131	44	42,286	173,051	5564	8	4.1	2606
	775132	3	577	2,346	183	3	4.1	73
	775133	13	6,443	27,273	1064	6	4.2	391
	775135	3	987	3,875	158	6	3.9	58
	775137	7	2,584	10,577	794	3	4.1	262
Delarof Islands	785101	6	1,808	6,927	243	8	3.8	117
	785102	24	55,822	214,289	6595	9	3.8	3124
	785131	26	95,035	365,203	9,958	10	3.8	5,344

-Continued-

Table 4-6. (Page 2 of 2)

Locale	Statistical area	Number of		Harvest ^{a,b}	Pots lifted	Average		
		Landings	Crab ^a			CPUE ^c	Weight ^b	Deadloss ^b
Buldir Reef	785132	16	7,394	28,606	1,167	6	3.9	473
	785134	10	5,678	21,553	649	9	3.8	449
	785135	20	24,747	93,467	2,302	11	3.8	1,209
	795101	4	3,436	13,366	336	10	3.9	148
	795102	10	7,679	29,675	1,024	8	3.9	344
	835200	18	13,464	57,361	3,402	4	4.3	1,050
	845130	18	29,771	124,562	3,854	8	4.2	2,864
	845202	10	32,657	134,928	6,438	5	4.1	8,234
	855200	10	28,454	114,556	7,584	4	4.0	3,647
Other ^d		460	384,619	1,645,734	56,527	7	4.3	30,556

^aDeadloss included.^bIn pounds.^cNumber of legal crabs per pot lift.^dCombination of statistical areas in which landings were made by fewer than three vessels.

Table 4-7. Aleutian Islands golden king crab fishery data, 2001/2002 season.

Season	Locale	Number of			Harvest ^{a,b}	Number of Pots		Average		Deadloss ^b
		Vessels	Landings	Crabs ^a		Registered	Lifted	Weight ^b	CPUE ^c	
2001/2002	East of 174° W. West of 174° W.	19	45	725,297	3,158,179	12,927	62,325	4.4	12	49,523
F I S H E R Y I N P R O G R E S S										

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

Table 4-8. Aleutian Islands scarlet king crab fishery data, 1992-2001.

Year	Number of			Harvest ^{a,b}	Pots lifted	Value		Average		
	Vessels	Landings	Crabs ^a			Exvessel ^c	Total ^d	Weight ^b	CPUE ^e	Deadloss ^b
1992 Dutch Harbor										
Adak										
1993 Dutch Harbor										
Adak										
1994 Dutch Harbor										
Adak	6	10	6,624	21,308	7,520	\$1.76	\$0.02	3.2	<1	10,829
Total	7	10	6,624	21,308	7,520	\$1.88	\$0.02	3.1	<1	10,829
1995 Dutch Harbor	3	3	6,270	13,871	5,706	\$2.18	\$0.03	2.2	1	1,755
Adak	6	18	19,544	49,126	15,046	\$1.82	\$0.09	2.5	1	2,066
Total	8	21	25,814	62,997	20,752	\$1.89	\$0.11	2.4	1	3,821
1996 Dutch Harbor	3	10	10,190	20,924	10,247	\$1.78	\$0.03	2.0	1	3,990
Adak	4	13	10,133	24,076	19,170	\$1.80	\$0.04	2.4	<1	1,861
Total	7	23	20,323	45,000	29,417	\$1.79	\$0.07	2.2	<1	5,851
1997 Aleutian Islands	3	12	2,698	6,720	21,217	\$1.40	\$0.01	2.5	<1	408
1998 Aleutian Islands	7									
1999 Aleutian Islands	2									
2000 Aleutian Islands	2									
2001 Aleutian Islands	2									

^aDeadloss included.

^bIn pounds.

^cPrice per pound.

^dMillions of dollars.

^eNumber of legal crabs per pot lift.

Table 4-9. Eastern Aleutian District Tanner crab fishery data, 1973/74 - 2001.

Season	Number of			Harvest ^{a,b}	Pots lifted	Average		Deadloss ^b
	Vessels	Landings	Crabs			Weight ^b	CPUE ^c	
1973/74	6	14	210,539	498,836	NA	2.4	60	0
1974/75				CONFIDENTIAL				
1975/76	8	13	219,166	534,295	4,646	2.4	47	0
1976/77	12	35	544,755	1,239,569	9,640	2.3	57	0
1977/78	15	198	1,104,631	2,494,631	29,855	2.3	37	0
1978/79	20	174	542,081	1,280,115	18,618	2.4	20	0
1979/80	18	107	352,819	886,487	18,040	2.4	20	NA
1981	29	119	264,238	654,514	21,771	2.4	12	NA
1982	31	138	332,260	739,694	30,109	2.2	11	NA
1983	23	107	250,774	547,830	22,168	2.1	11	NA
1984	16	91	104,761	239,585	11,069	2.3	9	NA
1985	6	56	71,918	165,529	5,620	2.3	13	NA
1986	9	37	73,187	167,339	10,244	2.3	7	NA
1987	7	63	71,338	160,292	5,294	2.2	13	NA
1988	19	130	129,468	309,918	11,011	2.4	12	NA
1989	12	109	144,746	326,396	14,685	2.2	10	NA
1990	10	75	73,269	171,785	6,858	2.3	11	0
1991	5	27	21,511	50,038	1,849	2.3	12	0
1992	4	29	42,096	98,703	2,963	2.3	14	0
1993	7	34	51,441	118,609	3,530	2.3	15	0
1994	8	120	71,962	166,545	6,323	2.3	11	40
1995-2001				FISHERY CLOSED				

^aDeadloss included beginning 1980.

^bIn pounds.

^cNumber of legal crabs per pot lift.

Table 4-10. Eastern Aleutian District Tanner crab fishery
economic performance data, 1973/74-2001.

Season	Date		Value	
	Opened	Closed	Exvessel ^a	Total ^b
1973/74	1-Oct	31-Jul	NA	
1974/75	18-Jan	15-Oct		
1975/76	20-Jan	15-Oct	\$0.20	\$0.11
1976/77	7-Nov	15-Jun	\$0.30	\$0.38
1977/78	1-Nov	15-Jun	\$0.38	\$0.95
1978/79	1-Nov	15-Jun	\$0.52	\$0.67
1979/80	1-Nov	15-Jun	\$0.52	\$0.46
1981	15-Jan	15-Jun	\$0.58	\$0.38
1982	15-Feb	15-Jun	\$1.25	\$0.92
1983	15-Feb	15-Jun	\$1.20	\$0.66
1984	15-Feb	15-Jun	\$0.98	\$0.23
1985	15-Jan	15-Jun	\$1.30	\$0.22
1986	15-Jan	15-Jun	\$1.50	\$0.25
1987	15-Jan	15-Jun	\$2.00	\$0.32
1988	15-Jan	10-Apr	\$2.10	\$0.65
1989	15-Jan	7-May	\$2.90	\$0.95
1990	15-Jan	9-Apr	\$1.85	\$0.32
1991	15-Jan	31-Mar	\$1.25	\$0.06
1992	15-Jan	31-Mar	\$1.75	\$0.18
1993	15-Jan	31-Mar	\$1.70	\$0.20
1994	15-Jan	31-Mar	\$2.35	\$0.39
1995-2001		FISHERY CLOSED		

^aPrice per pound.

^bMillions of dollars.

Table 4-11. Eastern Aleutian District grooved Tanner crab fishery data, 1993-2001.

Year	Number of			Harvest ^{a,b}	Pots lifted	Average		Deadloss ^b	Value	
	Vessels	Landings	Crabs ^a			Weight ^b	CPUE ^c		Exvessel ^d	Total ^e
1993						CONFIDENTIAL				
1994	3	27	426,230	759,239	38,106	1.8	11	19,474	\$1.73	\$1.3
1995	7	51	494,522	850,427	75,259	1.7	6	28,338	\$1.57	\$1.3
1996	3	24	55,593	106,071	24,199	1.9	2	7,659	\$1.00	\$1.0
1997-2000						NO LANDINGS				
2001						CONFIDENTIAL				

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dPrice per pound.

^eMillions of dollars.

Table 4-12. Eastern Aleutian District triangle Tanner crab fishery data, 1993-2001.

Year	Number of			Harvest ^{a,b}	Pots lifted	Average		Deadloss ^b	Value	
	Vessels	Landings	Crabs ^a			Weight ^b	CPUE ^c		Exvessel ^d	Total ^e
1993						NO LANDINGS				
1994						NO LANDINGS				
1995	2					CONFIDENTIAL				
1996	2					CONFIDENTIAL				
1997-2000						NO LANDINGS				
2001	1					CONFIDENTIAL				

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dPrice per pound.

^eMillions of dollars.

Table 4-13. Western Aleutian District Tanner crab fishery data, 1973/74-2001/02.

Year	Number of		Crabs ^a	Harvest ^{a,b}	Pots lifted	Average		Deadloss ^b
	Vessels	Landings				Weight ^b	CPUE ^c	
1973/74	7	12	31,079	71,887	2,390	2.3	13	NA
1974/75					CONFIDENTIAL			
1975/76					CONFIDENTIAL			
1976/77					NO LANDINGS			
1977/78	6	7	103,190	237,512	2,700	2.3	38	NA
1978/79	6	9	84,129	197,244	4,730	2.3	18	0
1979/80	10	12	147,843	337,297	5,952	2.3	25	NA
1980/81	9	23	95,102	220,716	7,327	2.3	13	0
1981/82	17	43	364,164	838,697	21,910	2.3	17	6,470
1982/83	61	125	225,491	488,399	40,450	2.2	6	7,662
1983/84	31	86	171,576	384,146	20,739	2.2	8	200
1984/85	31	41	75,009	163,460	13,416	2.2	6	1,000
1985/86	15	30	98,089	206,814	7,999	2.1	12	0
1986/87	8	24	19,874	42,761	10,878	2.1	2	200
1987/88	15	37	63,545	141,390	7,453	2.2	9	200
1988/89	36	77	69,280	148,997	18,906	2.1	4	233
1989/90	12	30	22,937	48,746	6,204	2.1	4	3,810
1990/91	5	21	6,901	14,779	1,309	2.1	5	125
1991/92	8	8	3,483	7,825	986	2.2	4	NA
1992/93					CONFIDENTIAL			
1993/94					NO LANDINGS			
1994/95					NO LANDINGS			
1995/96					CONFIDENTIAL			
1996/97-2001/02					FISHERY CLOSED			

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot pull.

Table 4-14. Western Aleutian District commercial Tanner crab fishery economic data 1973/74-2001/02.

Year	Value	
	Exvessel ^a	Total
1973/74	NOT AVAILABLE	
1974/75	CONFIDENTIAL	
1975/76	CONFIDENTIAL	
1976/77	NO LANDINGS	
1977/78	\$ 0.38	\$90,255
1978/79	\$ 0.53	\$104,539
1979/80	\$ 0.52	\$175,394
1980/81	\$ 0.54	\$119,187
1981/82	\$ 1.30	\$1,081,895
1982/83	\$ 1.27	\$610,536
1983/84	\$ 0.95	\$364,749
1984/85	\$ 1.30	\$211,198
1985/86	\$ 1.40	\$289,540
1986/87	\$ 1.50	\$63,842
1987/88	\$ 2.10	\$296,499
1988/89	\$ 1.00	\$148,764
1989/90	\$ 1.00	\$44,936
1990/91	\$ 1.25	\$18,318
1991/92	\$ 1.00	\$7,825
1992/93	CONFIDENTIAL	
1993/94	NO LANDINGS	
1994/95	NO LANDINGS	
1995/96	CONFIDENTIAL	
1996/97-2001/02	FISHERY CLOSED	

^aPrice per pound.

Table 4-15. Western Aleutian District grooved Tanner crab fishery data, 1992-2001.

Year	Harvest ^{a,b}	Vessels	Pots lifted	Value		Average		Deadloss ^b
				Exvessel ^c	Total ^d	Weight ^b	CPUE ^e	
1992				CONFIDENTIAL				
1993				NO LANDINGS				
1994				CONFIDENTIAL				
1995	145,795	6	17,749	\$1.52	\$0.195	1.9	4	17,190
1996				CONFIDENTIAL				
1997-1998				NO LANDINGS				
1999-2001				NO COMMERCIAL FISHERY				

^aDeadloss included.

^bIn pounds.

^cPrice per pound.

^dMillions of dollars.

^eNumber of legal crabs per pot lift.

Table 4-16. Aleutian District Dungeness crab fishery data, 1974-2001.

Year	Season Dates	Number of			Harvest ^{a,b}	Pots Lifted	Average		Price per Pound
		Vessels	Landings	Crabs ^a			Weight ^b	CPUE ^c	
1974	01/01-12/31	3	13	24,459	60,517	3,399	2.4	8	NA
1975	01/01-12/31				C O N F I D E N T I A L				
1976/77	05/01-01/01				N O L A N D I N G S				
1977/78	05/01-01/01				N O L A N D I N G S				
1978/79	05/01-01/01				C O N F I D E N T I A L				
1979/80	05/01-01/01				C O N F I D E N T I A L				
1980/81	05/01-01/01				N O L A N D I N G S				
1981/82	05/01-01/01				N O L A N D I N G S				
1982/83	05/01-01/01				C O N F I D E N T I A L				
1983/84	05/01-01/01				C O N F I D E N T I A L				
1984/85	05/01-01/01	4	50	40,128	91,739	13,555	2.3	3	\$1.35
1985/86	05/01-01/01	4	19	8,590	17,830	1,706	2.1	5	NA
1986/87	05/01-01/01				C O N F I D E N T I A L				
1987/88	05/01-01/01	5	43	13,247	26,627	2,987	2	4	\$0.95
1988/89	05/01-01/01	6	45	10,814	22,634	2,581	2.1	4	\$0.90
1989/90	05/01-01/01	4	31	5,165	11,124	2,078	2.1	2	\$0.90
1990/91	05/01-01/01	3	11	8,379	17,365	1,345	2.1	6	\$0.90
1991/92	05/01-01/01	4	14	3,654	7,412	732	2	5	\$1.25
1992/93	05/01-01/01	4	13	2,854	5,649	555	2	5	\$0.83
1993/4	05/01-01/01	5	12	3,448	7,531	797	2.2	4	\$0.78
1994/95-2000/01	05/01-01/01				N O L A N D I N G S				
2001/02	05/01-01/01				C O N F I D E N T I A L				

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

Table 4-17. Aleutian Islands District trawl shrimp fishery data, 1972-2001.

Season	Date		Number of		Tows	Harvest ^a	Value	
	Opened	Closed	Vessels	Landings			Exvessel ^b	Fishery ^c
1972	1/1	12/1	CONFIDENTIAL					
1973	1/1	12/1	CONFIDENTIAL					
1974	1/1	12/1	7	88	721	5,749,407	NA	NA
1975	1/1	12/1	4	14	54	467,196	NA	NA
1976	1/1	12/1	8	66	689	3,670,609	\$0.07	\$0.26
1977/78	2/1	3/1	7	93	1,372	6,800,393	\$0.12	\$0.82
1978/79	4/1	3/1	7	74	1,007	4,946,350	\$0.15	\$0.74
1979/80	4/1	2/1	7	68	799	3,292,049	\$0.20	\$0.66
1980	3/1	12/1	4	60	711	2,454,829	\$0.23	\$0.56
1981	3/1	12/1	6	45	551	2,185,326	\$0.22	\$0.48
1982	5/1	6/1	CONFIDENTIAL					
1983-1991			NO LANDINGS					
1992	1/1	12/1	4	6	94	72,133	NA	NA
1993-1998			NO LANDINGS					
1999	1/1	7/9	2	CONFIDENTIAL				
2000-2001			FISHERY CLOSED					

^aIn pounds.

^bPrice per pound.

^cIn millions of dollars.

Table 4-18. Aleutian Islands miscellaneous shellfish fishery data, 1996-2001.

Year	Fishery	Number of		Number of Pots Pulled	Harvest ^a
		Vessels	Landings		
1996	Octopus	35	119	17,800	62,214 3,701
	Sea Urchins	6	15 ^b		
	Sea Cucumbers		NO LANDINGS		
	Hair Crab		NO LANDINGS		
	Snails		NO LANDINGS		
	<i>Paralomis multispina</i>		NO LANDINGS		
1997	Octopus ^c	38	107		73,472
	Sea Urchins		NO LANDINGS		
	Sea Cucumbers		NO LANDINGS		
	Hair Crab		NO LANDINGS		
	Snails		NO LANDINGS		
	<i>Paralomis multispina</i>				
1998	Octopus		CONFIDENTIAL		29,360
	Octopus ^c	24	75		
	Sea Urchins		NO LANDINGS		
	Sea Cucumbers		NO LANDINGS		
	Hair Crab		NO LANDINGS		
	Snails		NO LANDINGS		
	<i>Paralomis multispina</i>		NO LANDINGS		
1999	Octopus ^c	34	95		115,322
	Sea Urchins		NO LANDINGS		
	Sea Cucumbers		NO LANDINGS		
	Hair Crab		NO LANDINGS		
	Snails		NO LANDINGS		
	<i>Paralomis multispina</i>		NO LANDINGS		
2000	Octopus ^c	31	91		21,265
	Sea Urchins		NO LANDINGS		
	Sea Cucumbers		NO LANDINGS		
	Hair Crab		NO LANDINGS		
	Snails		NO LANDINGS		
	<i>Paralomis multispina</i>		NO LANDINGS		
2001	Octopus ^c	25	51		13,097
	Sea Urchins		NO LANDINGS		
	Sea Cucumbers		NO LANDINGS		
	Hair Crab		NO LANDINGS		
	Snails		NO LANDINGS		
	<i>Paralomis multispina</i>		NO LANDINGS		

^aIn pounds. Deadloss included.

^bDives.

^cOctopus bycatch.

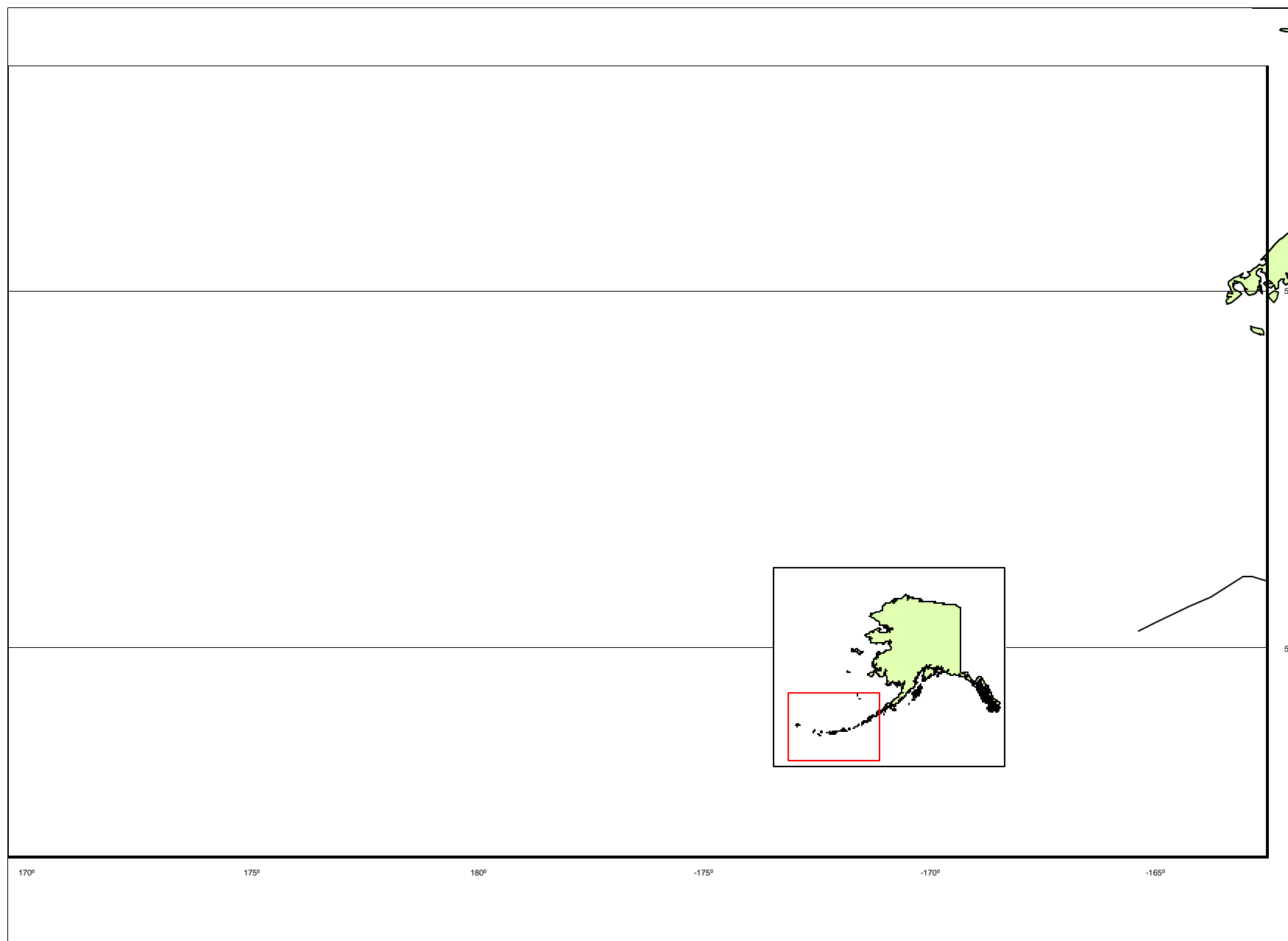


Figure 4-1. Aleutian Islands, Area O, king crab management area.

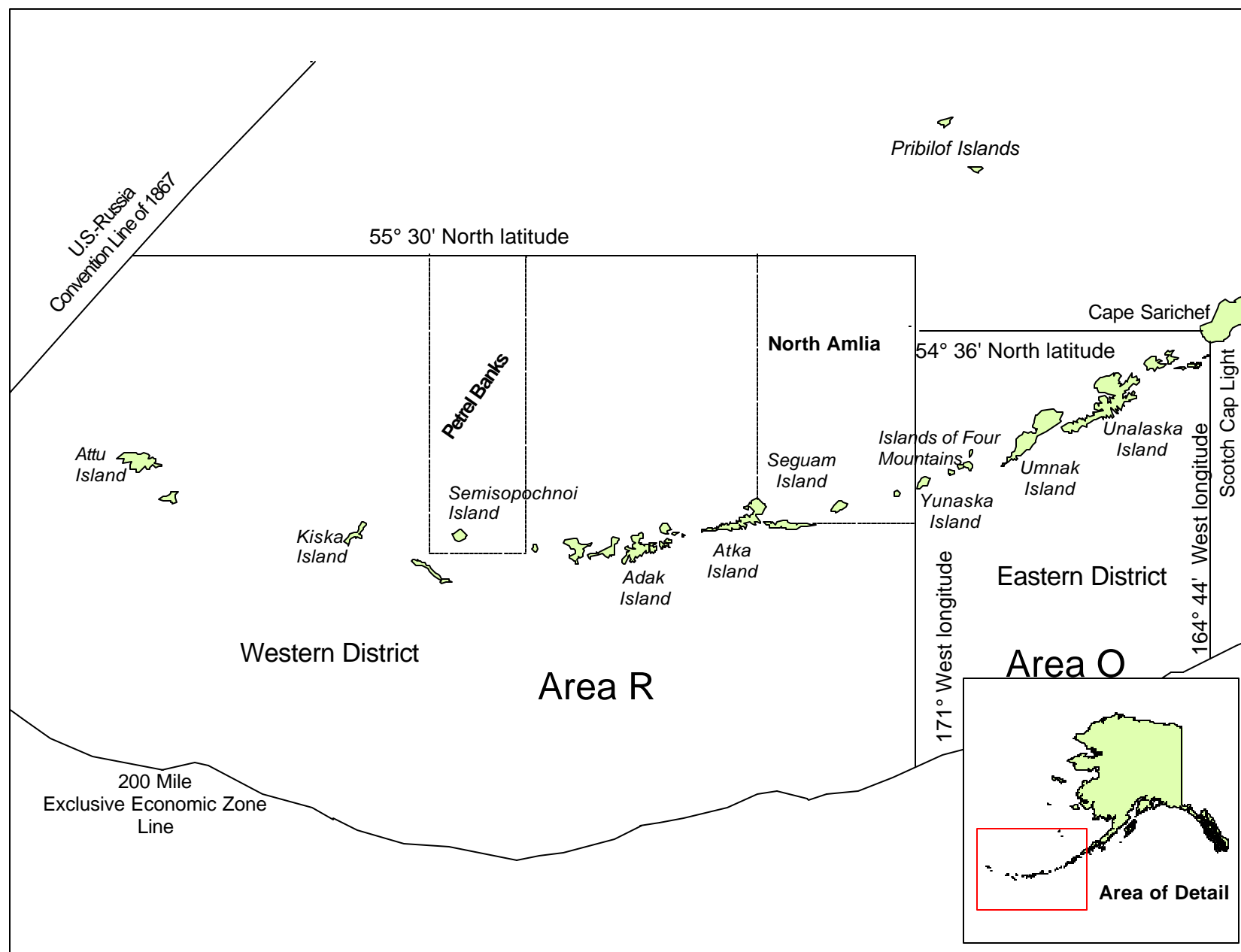


Figure 4-2. Adak (Area R) and Dutch Harbor (Area O) king crab Registration Areas and Districts 1981/82 – 1996/97.

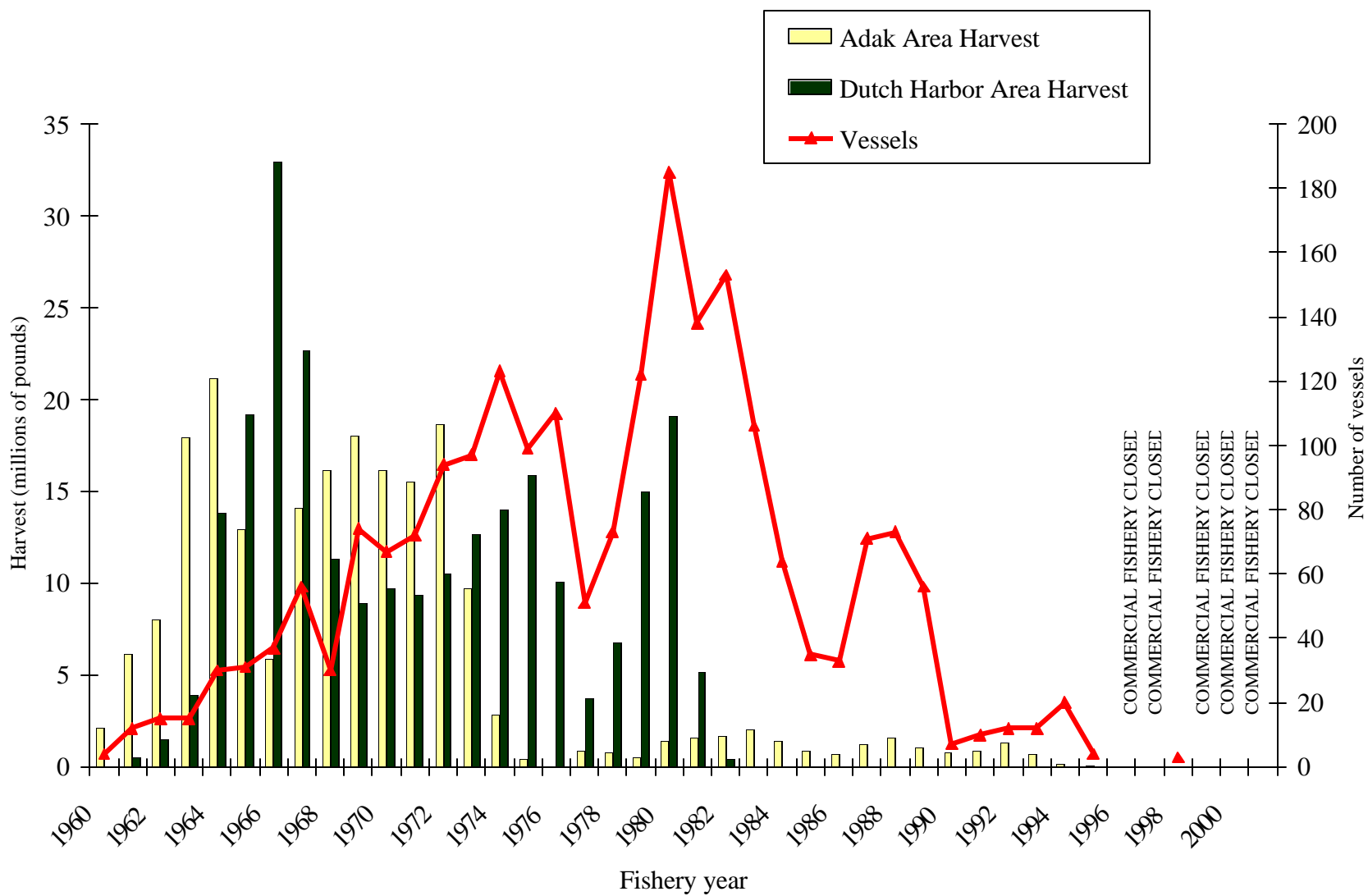


Figure 4-3. Aleutian Islands red king crab fishery harvest and effort, 1960-2001.

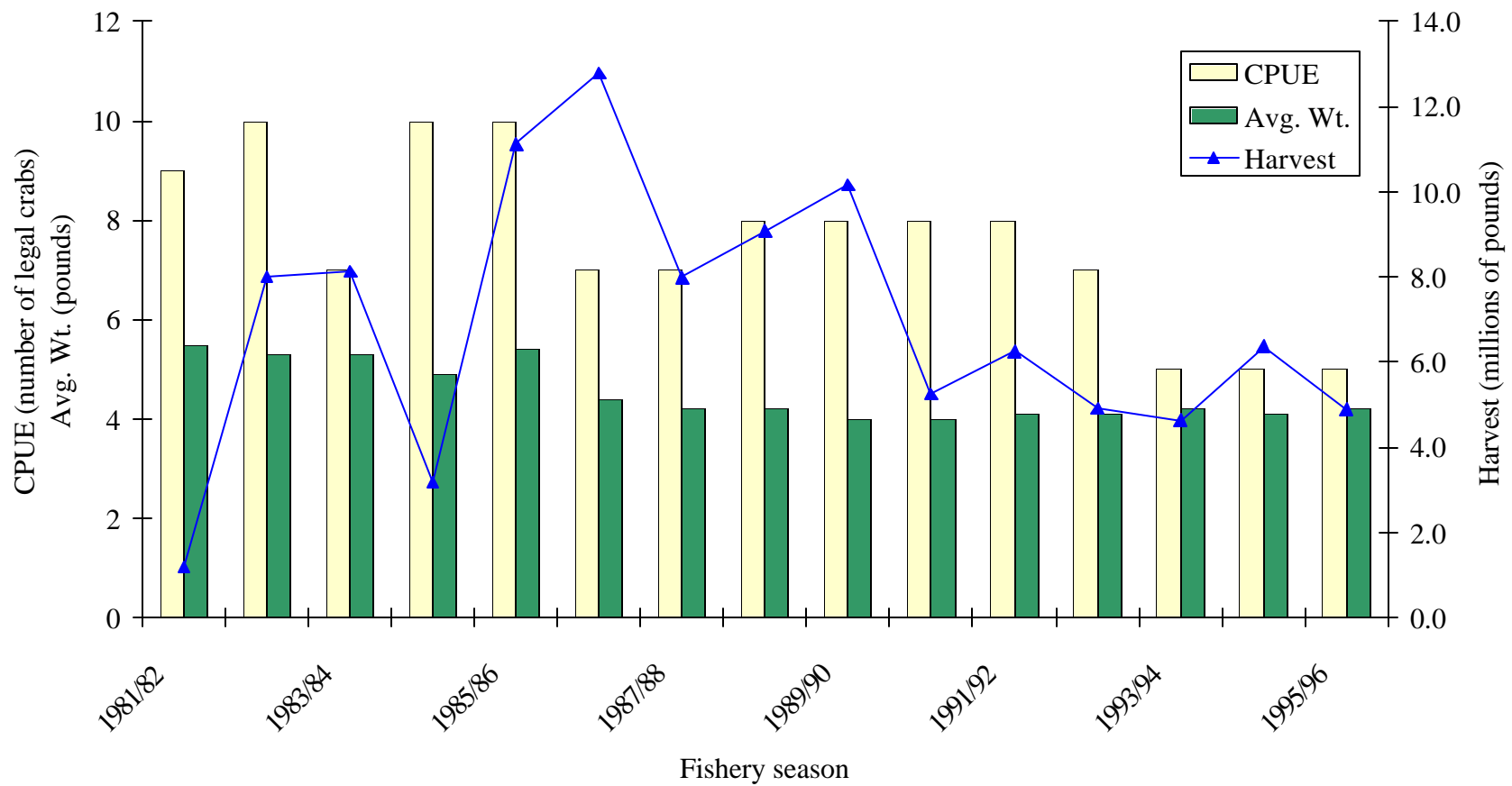


Figure 4-4. Adak Area golden king crab fishery harvest, fishery performance and average weight data, 1981/82-1995/96 seasons.

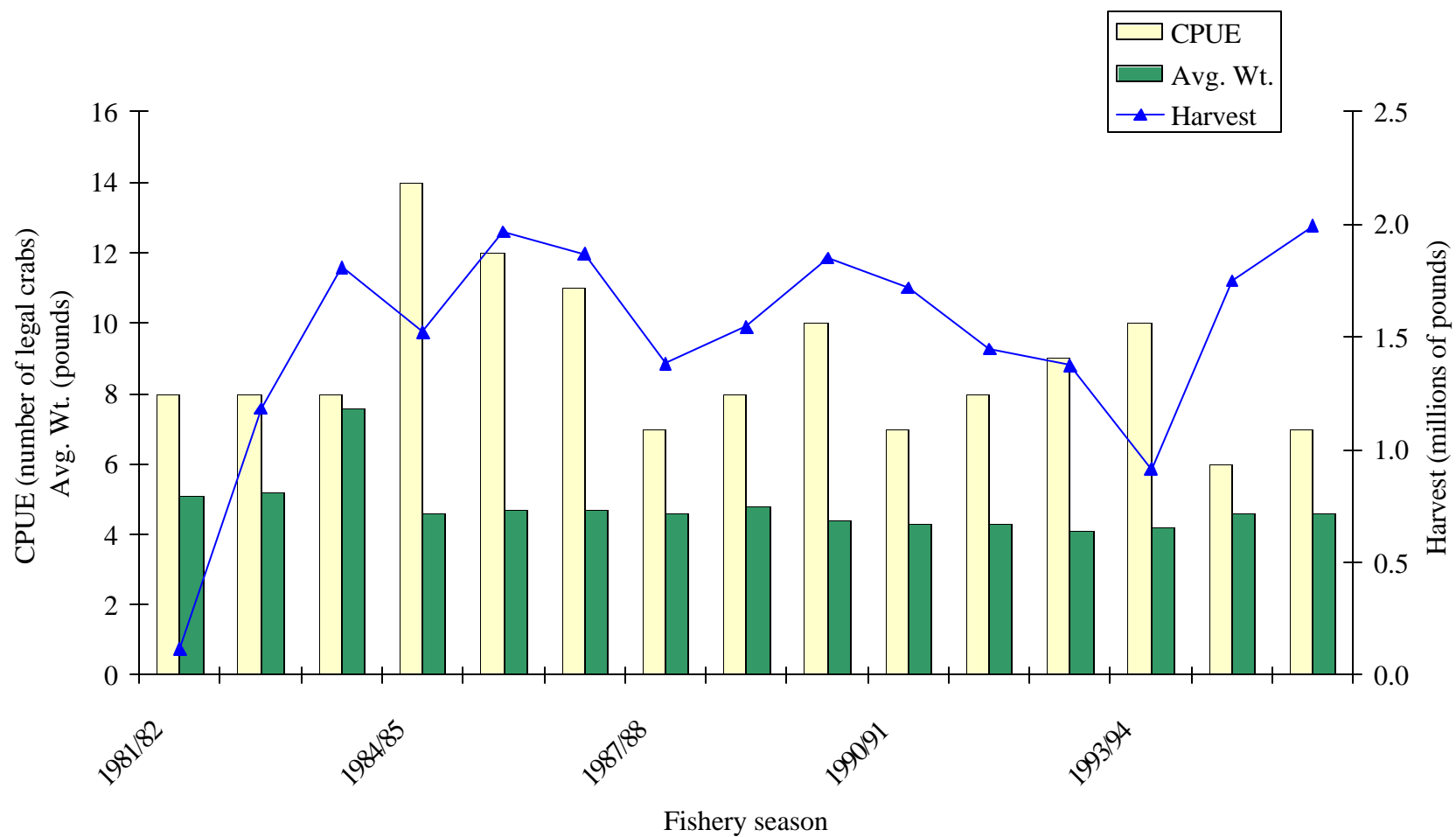


Figure 4-5. Dutch Harbor area golden king crab fishery harvest, fishery performance and average weight data, 1981/82-1995/96 seasons.

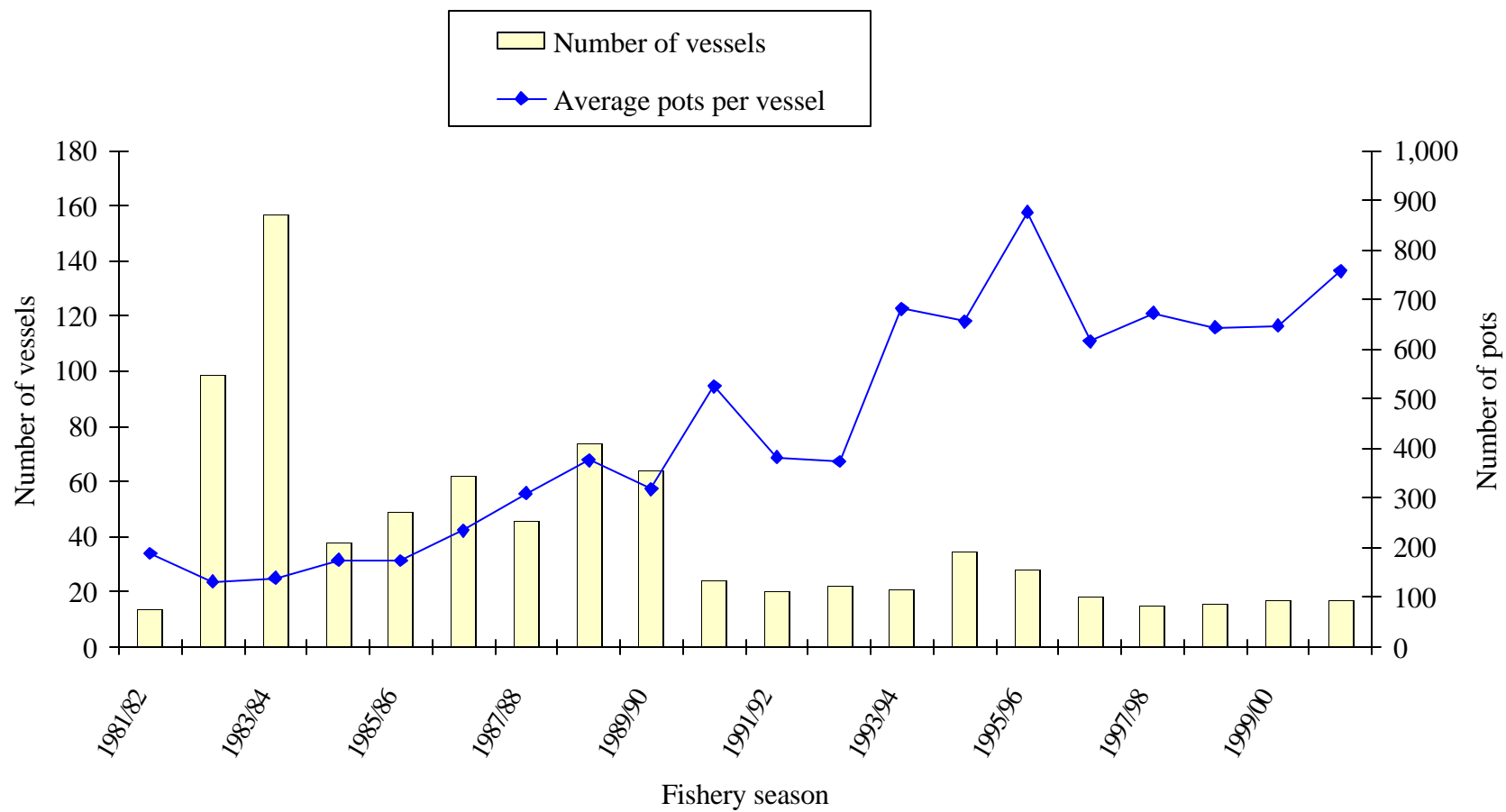


Figure 4-6. Aleutian Islands golden king crab fishery vessel registrations and average number of pots per vessel 1981/82-2000/01.

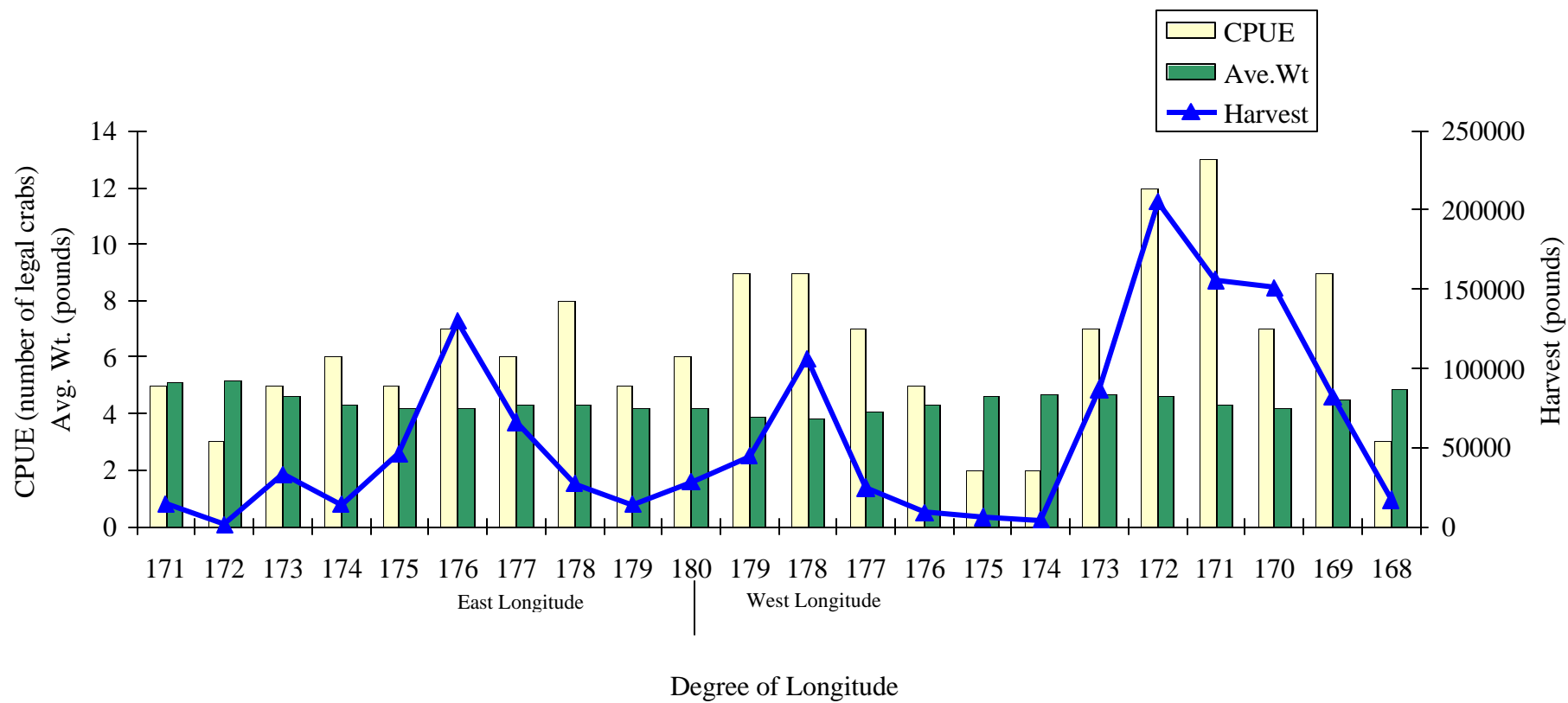


Figure 4-7. Aleutian Islands golden king crab fishery harvest, catch per unit of effort and average weight data by degree of longitude, 2000/2001.

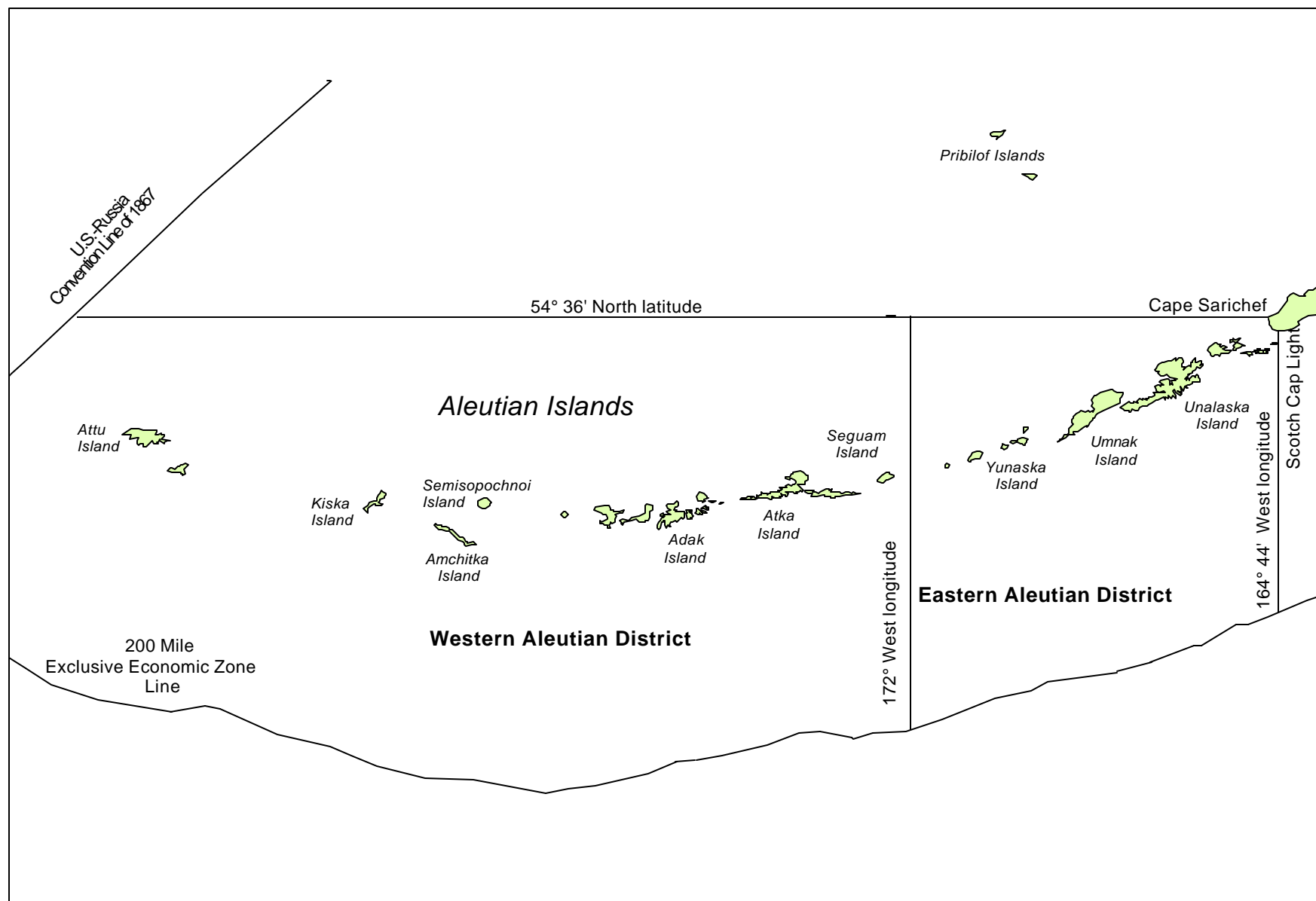


Figure 4-8. Eastern and Western Aleutian Districts of Tanner crab Registration Area J.

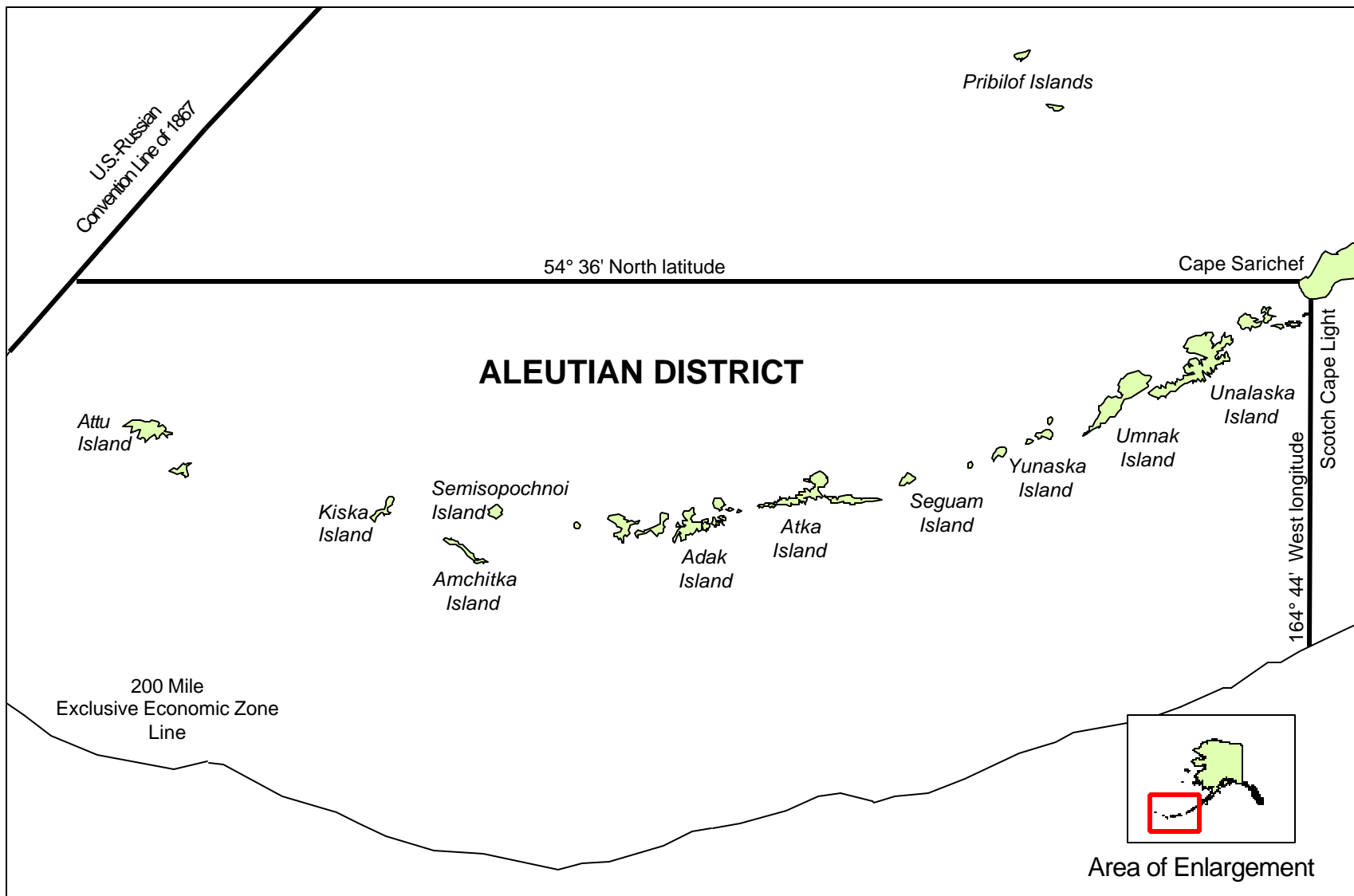


Figure 4-9. Aleutian Dungeness crab management district.

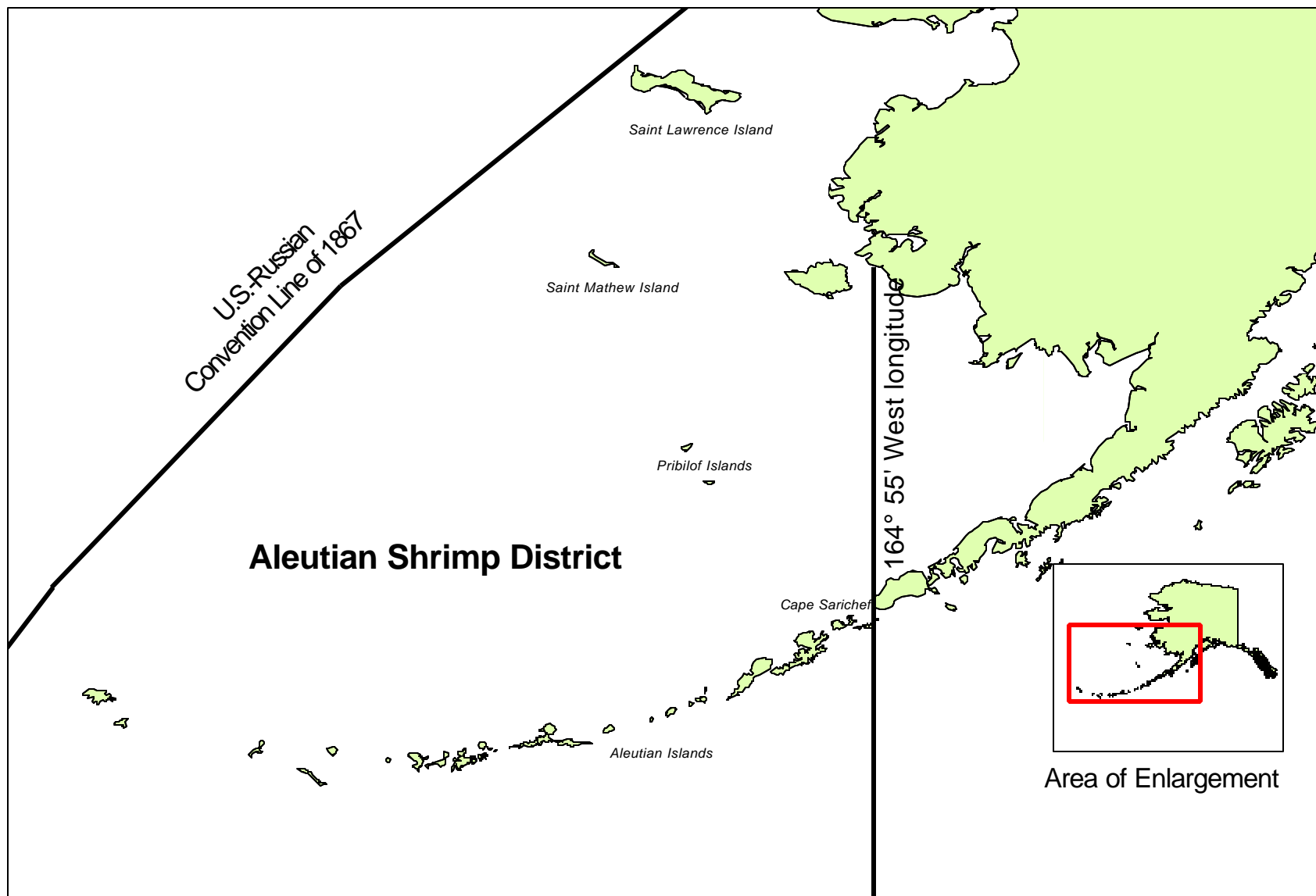


Figure 4-10. Aleutian shrimp management district.

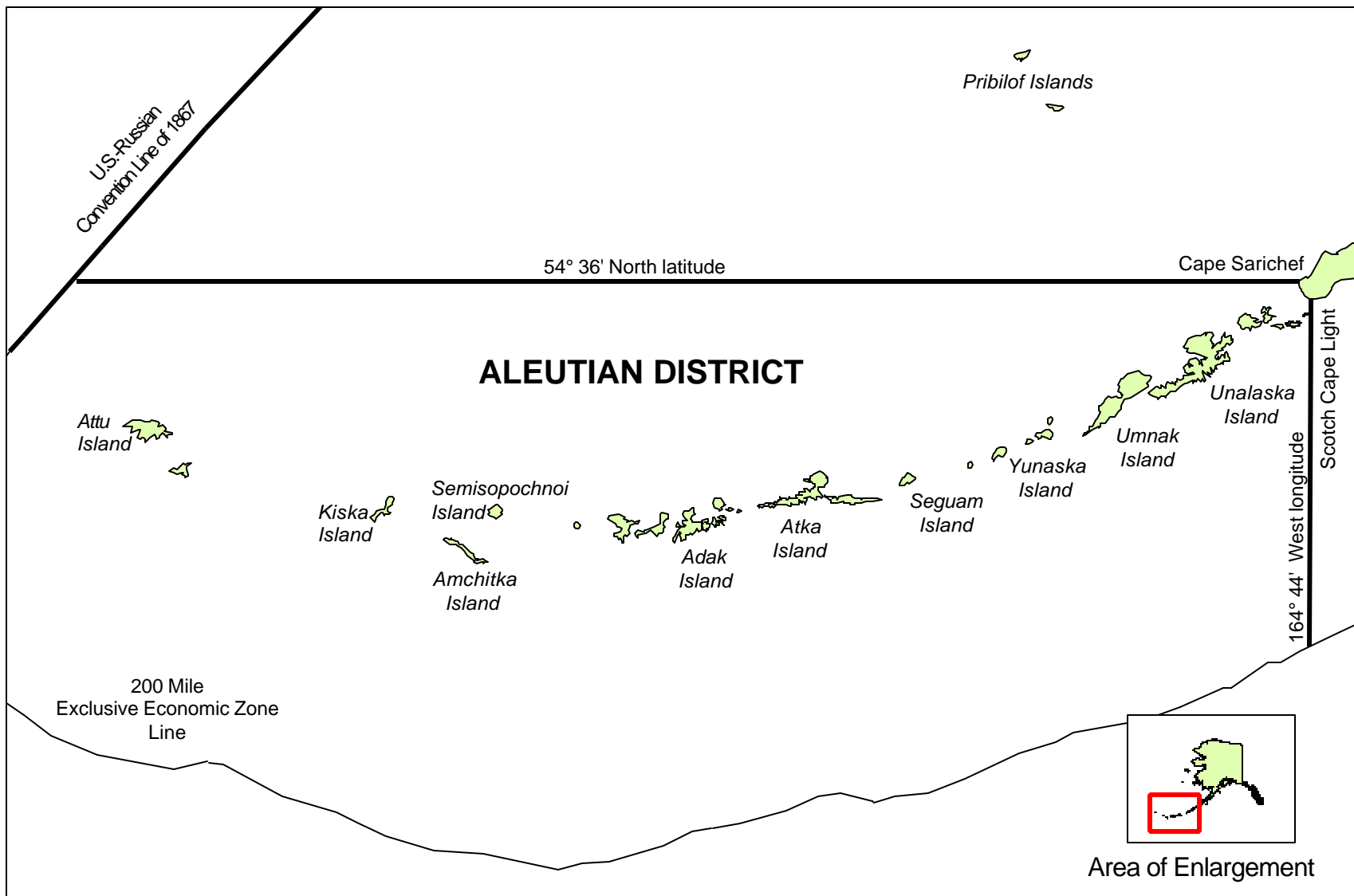


Figure 4-11. Aleutian Islands miscellaneous shellfish management district.

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KING CRAB REGISTRATION AREA T BRISTOL BAY

Description of Area

King crab Registration Area T (Bristol Bay) includes all waters north of the latitude of Cape Sarichef (54°36' N lat.), east of 168° W long., and south of the latitude of Cape Newenham (58°39' N lat.) (Figure 5-1).

Historic Background

Commercial fishing for red king crabs *Paralithodes camtschaticus* in the Bering Sea began with Japanese harvests in 1930. The Japanese fishery ended in 1940 and resumed again from 1953 until 1974. The Russian king crab fleet operated in the eastern Bering Sea from 1959 through 1971. U.S. fishers entered the eastern Bering Sea fishery with trawl gear in 1947. Effort and catches declined in the 1950s with no catch being reported in 1959. A period of low fluctuating catches followed through 1966 before the domestic fishery expanded to full-scale in the late 1970s.

The red king crab fishery in the eastern Bering Sea traditionally harvested crabs from waters north of Unimak Island and the Alaska Peninsula from Cape Sarichef to Port Heiden. With the decline of king crab stocks in other areas of the state, U.S. effort in the eastern Bering Sea increased beginning in 1968 with a peak harvest of 129.9 million pounds in 1980 (Table 5-1, Figure 5-2). Since 1980, king crab stocks throughout Alaska, including Bristol Bay, have declined sharply and have not recovered to pre 1980 levels, leading to closures of the Bristol Bay red king crab (BBRKC) fishery in 1983, 1994 and 1995. From 1980 to 2000, economic value of the BBRKC fishery ranged from \$8.9 million in 1982 to a high of \$115.3 million in 1980 (Table 5-2, Figure 5-3). Exvessel price ranged from \$0.90 per pound in 1980 to a high of \$6.26 per pound in 1999.

In 1980, the Alaska Board of Fisheries (BOF) defined that portion of the Bering Sea south of Cape Newenham and east of 168° W. long. as the Bristol Bay King Crab Registration Area T, and the Area was designated an exclusive registration area. During any king crab registration year (June 28 through June 27), vessels registering for and fishing in this area are prohibited from fishing in any other exclusive or super-exclusive king crab registration area. Only non-exclusive areas (the Bering Sea Area Q and or Aleutians Islands Area O) can subsequently be fished once a vessel is registered in Area T.

The National Marine Fisheries Service (NMFS) has conducted annual trawl abundance index surveys of the eastern Bering Sea since 1968. This multi-species (crab and groundfish) survey is conducted during the summer months and the resulting area-swept estimates of abundance are published annually. In 1983, NMFS trawl survey of the Bering Sea indicated a record low number of legal male crabs and the lowest total king crab population ever recorded. Small female crabs carrying fewer eggs and high predator abundance were also noted. Consequently, the fishery was closed for the 1983 season. The fishery reopened in 1984 and catches slowly increased to over 20.3 million pounds in 1990. Due to the

large number of catcher-processors and floating-processors in the fishery and the inability of the Alaska Department of Fish and Game (ADF&G) to monitor these catches, an onboard observer program was initiated in 1988. Fishing effort increased dramatically from 89 vessels in 1984 to over 300 vessels in 1991 (Table 5-1, Figure 5-3). The number of pots being fished by the fleet also increased, with almost 90,000 pots registered for the 1991 fishery, compared to just under 22,000 pots registered in 1984.

Due to the increased number of pots, the BOF established a 250-pot limit enforced through a buoy sticker program, which was implemented for the 1992 BBRKC fishery. This measure was intended to improve manageability of the fishery by extending the length of the season as well as reducing the potential for pot loss.

Immediately following the 1992 BBRKC fishery, the 250-pot limit was repealed by NMFS. This action was due to inconsistencies with provisions of the Bering Sea/Aleutian Islands King and Tanner Crab Federal Management Plan (FMP), mandating application of pot limits in a nondiscriminatory manner. In the spring of 1993, the BOF passed new regulations, setting pot limits based on overall vessel length. For the BBRKC fishery, vessels in excess of 125 feet in overall length were limited to 250 pots and vessels 125 feet and under in overall length were allowed a maximum of 200 pots. These pot limits were administered through a buoy tag program from the Dutch Harbor and Kodiak ADF&G offices.

Voluntary daily vessel reports received via single side band (SSB) radio and marine telex (MCI) have been used to manage the BBRKC fishery since 1993. That season ran for 9 days and the total harvest was 14.6 million pounds, approximately 2.2 million pounds less than the 16.8 million pounds harvest guideline.

Results from NMFS 1994 summer trawl survey of the Eastern Bering Sea indicated declines in all size classes of both male and female red king crabs in the Bristol Bay area. Compared to observations made during the 1993 survey, the abundance index of large male crabs declined 25%. Based on the 1994 survey results, mature female abundance was estimated at 7.5 million crabs, which was below the minimum threshold of 8.4 million mature crabs necessary to allow a fishery. Consequently, the BBRKC fishery was not open for the 1994 season.

Due to potential measurement errors in the area-swept trawl abundance estimates, ADF&G developed a length-based analysis (LBA) model for estimating population abundance. This method, used for the first time prior to the 1995 season, incorporates a variety of data sources including dockside sampling and observer collected data, as well as data collected on the annual NMFS survey. The LBA is less susceptible to year-to-year variations in factors unrelated to population abundance (i.e. oceanographic conditions, changes in species distribution and subsequent availability to the survey gear) and is therefore more likely to produce an accurate estimate of abundance. Analysis of the 1995 NMFS survey using the LBA model indicated no significant difference in the abundance of mature male and female red king crabs from estimates made from the 1994 survey (Zheng et al. 1995). Based on these combined results, the BBRKC fishery remained closed for the 1995 season.

Due to the depressed nature of the BBRKC population, the BOF, at their March 1996 meeting adopted a revised harvest strategy to promote stock rebuilding. One of the most significant changes to

the harvest strategy was a reduction in the exploitation rate of mature male crabs from 20% down to 10% or 15% depending upon the size of the effective spawning biomass (ESB).

Results from the LBA incorporating the 1996 NMFS survey data indicated increased abundance in all size classes of males and females compared to the 1995 estimate (Zheng et al. 1996). Of major importance was an increase in the number of mature females in 1996 to 10.2 million crabs, which was well above the threshold of 8.4 million mature female crabs necessary to allow a fishery. This was a significant increase relative to the prior two years where fishery closures were due to insufficient numbers of mature female crabs. Based on a 10% mature male exploitation rate, the 1996 guideline harvest level (GHL) was set at 5.0 million pounds. The 1996 fishery lasted four days and a total of 8.4 million pounds were harvested, exceeding the GHL by 68%.

Stemming from ADF&G's inability to adequately manage this fishery at low GHL levels, the BOF held a special meeting in August of 1997 implementing new pot limits and vessel preseason registration requirements. Also adopted were regulations that extended the tank inspection window for the BBRKC fishery from 24 to 30 hours and allowed fishers to leave baited pots on the fishing grounds when a fishery closure announcement is made with less than 24-hours of advance notice. New pot limits were based on vessel overall length, the preseason GHL, and the number of vessels which preseason registered for the fishery. These new pot limit regulations were adopted with a sunset provision of December 31, 1998, to provide for reevaluation at the 1999 BOF meeting. Specific information on pot limits, based on GHL and number of vessels participating in the Bristol Bay fishery, are found under 5 AAC 34.825 LAWFUL GEAR FOR REGISTRATION AREA T.

The LBA using the 1997 NMFS survey data indicated that while all components of the BBRKC crab stock increased from levels observed in 1996 (Zheng et al. 1997), ESB was below the 55 million pound threshold necessary to allow a 15% harvest rate. Therefore, a 10% mature male exploitation rate was used, generating a general fishery GHL of 7.0 million pounds for the 1997 season. Based on the GHL and number of vessels that filed a preseason registration, pot limits were set at 100 and 125 pots for small and large vessels, respectively. The 1997 fishery lasted only four days and a total of 8.8 million pounds were harvested. The 1997 harvest exceeded the GHL by 24% largely due to extremely high fishery performance in the final hours of the fishery.

Analysis of the 1998 NMFS survey data indicated the abundance of pre-recruit male red king crabs increased by 85%, resulting in an increase in the fishable stock of mature male crabs for the 1998 season. The abundance of mature females (>89 mm carapace length) increased by 42% (Stevens et al. 1998). Effective spawning biomass was estimated to be over 55 million pounds, resulting in a 15% harvest rate on mature male crabs. The GHL for the 1998 general fishery was 15.8 million pounds. Because the GHL was in excess of 12 million pounds, the preseason registration requirement was waived and pot limits were set at 200 for vessels less than or equal to 125 feet in length and 250 for vessels greater than 125 feet in length. Total harvest in the 1998 fishery, which lasted five days, was 14.3 million pounds.

At the March 1999 meeting, the BOF made permanent the interim management measures that were adopted in the fall of 1997. The BOF also passed anti-prospecting regulations that were amended in

2000. The regulations prohibit vessels from participating in the Bristol Bay king crab fishery if they have operated pot, longline, or trawl gear in that portion of Registration Area T north of 55° 30' N lat. and east of 164° W long. during the 30 days prior to the king crab season. However, a provision was made for vessels trawling in a directed pollock fishery in Area T north of 55° 30' N lat. and east of 164° W long. during the 14 days prior to the red king crab season. In order for these vessels to participate in the BBRKC fishery, they must deliver to an offshore processor or carry a NMFS approved observer for the entire 14 days prior to the opening. The BOF also passed a regulation that moved the opening date of the commercial red king crab fishery in Bristol Bay from November 1 to October 15. The change to an earlier opening was intended to improve fleet and industry efficiency by reducing down time between the BBRKC fishery and the Bering Sea king crab fisheries, opening on September 15.

The LBA including the 1999 NMFS survey data indicated that while the abundance of legal and mature male red king crabs in Bristol Bay increased, all other classes decreased from the 1998 level: small males by 57%, pre-recruit males by 27%, and large females by 7% (Zheng et al. 1999). The LBA estimates resulted in an ESB of 47.0 million pounds. By applying an exploitation rate of 10% to the mature male population, a general fishery GHF of 10.1 million pounds was set. Based on the GHF and number of vessels registered, pot limits were set at 160 for small vessels and 200 for large vessels. The 1999 season lasted five days, with a total harvest of 11.1 million pounds.

Length based analysis including the 2000 NMFS survey data indicated that the abundance of almost all size classes of the Bristol Bay red king crab stock decreased from levels observed in 1999. Small males increased by 192%, but all others decreased: pre-recruit males by 23%, mature males by 14%, and legal males by 3%. Large females also decreased by 10% (Zheng et al. 2000). The 2000 ESB was estimated to be 39.9 million pounds, a decrease of 11% compared to 1999. At 39.9 million pounds, ESB is above the threshold for a fishery opening with a 10% exploitation rate on mature males. The 10% exploitation rate on mature males resulted in a general fishery GHF of 7.7 million pounds. The 2000 fishery opened at 4:00 PM on October 16 after a 24-hour delay to allow strong winds in the Bristol Bay area to diminish. A total of 239 catcher-only vessels and 7 catcher-processors participated. However, only 244 vessels made landings. Based on post-season production reports, a total of 7.55 million pounds of red king crabs was harvested in the 4.2-day fishery, which was closed by emergency order at 9:00 PM on October 20.

American Fisheries Act

The American Fisheries Act (AFA), passed in 1998 by Congress, gave pollock fishers exclusive fishing privileges in the Bering Sea/Aleutian Islands (BSAI) pollock fishery. To protect the interests of fishers not directly benefited by the AFA, sideboards were established for AFA boats qualified to participate in BSAI crab fisheries. To implement the sideboards, the BOF developed a management plan, which specified that ADF&G will manage AFA vessels with a harvest cap equally apportioned between all AFA qualified vessels or through a cooperative fishery when 100% of AFA qualified participants agree to the cooperative. The harvest cap specified by the AFA was implemented for the first time in the 2000 BBRKC fishery.

Of the 239 catcher-only vessels that participated in the 2000 BBRKC fishery, 25 participated under AFA sideboards. The AFA vessels fished in a cooperative manner with a fixed harvest cap of 10.96% of the general fishery GHL, or 0.85 million pounds. Post-season production reports show that AFA vessels harvested approximately 0.72 million pounds or 84.7% of their cap.

2001 Fishery

NMFS survey and LBA results for 2001 indicate that the stock is above the fishery threshold with an estimated abundance of 21.2 million mature females and an estimated ESB of 40.6 million pounds. Neither of these estimates deviate significantly from those generated in 2000. Since ESB was estimated to be less than 55.0 million pounds an exploitation rate of 10% was applied to the mature male population. Given an estimated mature male abundance of 10.998 million crabs and an average weight of 6.5 pounds per legal crab, the 2001 GHL was set at 7.15 million pounds. The GHL was allocated between the general (6.61 million pounds) and community development quota fisheries (0.536 million pounds). Those vessels operating under the AFA sideboards were capped at a harvest of 10.96% of the general fishery GHL (0.7 million pounds).

Preseason vessel registration was required prior to 5:00 PM, September 24, 2001. Based on the 237 preseason vessel registrations received prior to that deadline and the 6.6 million pound general fishery GHL, pot limits were set at 100 pots for vessels less than or equal to 125 feet in overall length and 125 pots for vessels greater than 125 feet in overall length. The fleet registered a total 24,571 pots a slight (7%) reduction from 2000 when 26,352 pots were registered. In addition, preseason vessel registrations were used to select catcher vessels to carry onboard observers during the fishery; 23 catcher vessels were selected. Six catcher-processors and one floating-processor registered for the fishery. Both state employed and contractor supplied observers were deployed in the fishery. Based on preseason effort levels and recent catch rate data, the department chose to manage the 2001 fishery through inseason catch reports from fishers rather than with a closure announced prior to the opening. As part of the inseason management process, the department advised the fleet that catch updates would be made daily at noon and 9:00 PM and that the department would attempt to provide the fleet with 24-hours advance notice of the closure announcement, but given the small GHL, less than 24-hours advance notice was possible.

During the week preceding vessel registration, department staff consulted with United States Coast Guard (USCG) search and rescue personnel and National Weather Service (NWS) forecasters regarding a potential weather-related delay in season opening. NWS staff did not forecast storm force winds in the operational area of vessels that would be travelling to the Bristol Bay red king crab fishing grounds from Dutch Harbor, Akutan, King Cove or False Pass, nor were storm force winds forecast for the time period October 15-18. USCG personnel did not foresee that current or forecast weather conditions would hamper a search and rescue mission immediately before or during the first 18 hours of the fishery, thus the season was not delayed as it was in 2000.

Vessel hold and gear inspections as part of the “quick registration” process began October 9 in Dutch Harbor and October 10 in King Cove, Akutan and False Pass. Vessel registration began at 10:00 AM,

October 14. A total of 232 vessels registered for the fishery which began at 4:00 PM, October 15. This was the first year that tank inspections were available in False Pass and 21 vessels were registered there. Intent to participate in the volunteer catch reporting program was received from 108 vessels. Observers on 30 additional vessels contributed daily catch reports as well. Catch reports were first received at 6:00 PM October 15, however these reports represented only the first two hours of the season and no catch was reported.

By 6:00 PM October 16, catch rate was approximately 13 legal crabs per pot lift, the fleet was pulling approximately 12,000 pots per twelve hours and cumulative harvest had reached 1.2 million pounds (Table 5-3). Catch rates continued to increase through the 16th, but began to decrease on October 17th as very high winds and large seas struck the grounds. The 6:00 PM report on October 17, indicated the catch rate was approximately 14 legal crabs per pot lift, and the fleet was pulling just over 7,000 pots per twelve hours. The cumulative catch was 2.5 million pounds by the non-AFA fleet. Winds subsided on the evening of the 17th and the 6:00 AM report on October 18, indicated the fleet was pulling over 10,000 pots per twelve hours, catch rate had increased to over 20 legal crabs per pot lift and cumulative harvest was 3.8 million pounds. At 9:00 AM October 18, the department advised the fleet that based on the most recent catch rate information, it did not appear that 24-hours advance notice of the closure announcement could be provided. The fleet was advised that additional catch reports would be taken from the general fleet at 10:00 AM and from the AFA fleet at noon. The next update was scheduled for 1:00 PM October 18. At 1:00 PM October 18, the department announced that the fishery would close at 11:59 PM October 18. The closure was based on the attainment of the GHL using the most recent 12-hour harvest rate reported by the fleet. After the closure announcement, catch reports received on the evening of the 18th and morning of the 19th indicated that catch per unit of effort continued to increase and peaked at nearly 24 legal crabs per pot lift on the evening of the 18th. In addition the rate of pot lifts increased to approximately 18,000 per 12-hour period. The general fleet harvest projection based on inseason reports received after the closure announcement was approximately 7.5 million pounds. Actual harvest was 7,786,420 pounds.

Since less than 24-hours advance notice of the closure was provided, the fleet was permitted to leave baited pots on the grounds for up to ten days following the closure. Despite the relatively short 11-hour advance notice of the closure provided by the department, the majority of the fleet were able to unbait, or remove their pots from the grounds prior to the closure.

The 2001 Bristol Bay red king crab GHL was exceeded by approximately 18%. Primarily this was due to higher than expected catch and effort near the end of the fishery. Improving weather during the last 24 hours of the fishery contributed to inseason catch reports indicating that 3.7 million pounds of 7.5 million pounds was taken during the last 24 hours of the fishery (Table 5-3). The fleet pulled approximately 24,000 pots with a CPUE of 24 legal crabs per pot lift in the last 24 hours of the fishery. Approximately 70 vessels (35% of the non-AFA fleet) reported catch to the department each day. Voluntary catch reports for those vessels that reported on three or more days of the fishery were very accurate and were generally within 3% of the vessel's landed catch.

Performance of the 31 vessels participating under the AFA cap in the general fishery was similar to those in the non-capped portion of the fleet. AFA vessels reported catch information to a private fleet

manager every six hours. Vessels fished in the “Olympic manner” until 80% of the cap had been reached. Catch rates for the AFA fleet increased throughout the fishery and reached 26 legal crabs per pot lift on the morning of October 18th. The AFA fleet was estimated to have harvested 80% of the AFA cap by noon, October 18 and the fleet manager issued a not to exceed limit of 600 crabs per vessel to the fleet at that time. Twenty four of the AFA vessels were constrained by the not to exceed limit and stopped fishing prior to the closure. None of the participating vessels exceeded the individual limits and the AFA fleet harvested 703,578 pounds, or 97% of the 724,867 pound cap (Table 5-4). In 2000, 25 vessels participated under the AFA sideboards and two were constrained by the not to exceed limit.

The 2001 Bristol Bay red king crab fishery at 80 hours in length was the shortest on record and with a seasonal CPUE at 19 legal crabs per pot lift had the highest seasonal catch rate since 1980. In 2000, the seasonal CPUE was 12 legal crabs per pot lift. Catch rates were highest between 56° and 57° N lat. and between 162° and 164° W long. (Table 5-5). In general, the highest catch rates were observed to the south and west of those observed during the 2000 fishery. The fleet pulled approximately 63,000 pots to harvest 7,786,420 pounds. In 2000, the fleet pulled nearly 100,000 pots to harvest a similar number of crabs. Landed king crabs averaged 6.5 pounds per crab, the same average weight observed during the 2000 season and used during the 2001 inseason management and GHL setting process.

Fishers were paid an average price of \$4.81 per pound by shore plants in Dutch Harbor, Akutan, King Cove, Adak and Kodiak. Plants in Kodiak paid approximately \$0.25 per pound more than plants purchasing crabs in the Bering Sea and Aleutian Islands. In 2001, 27 vessels checked out of the registration area for delivery to Kodiak with approximately 800,000 pounds. In 2000, 26 vessels delivered 875,000 pounds to Kodiak. Deadloss from deliveries to Kodiak was approximately 36% greater than at other locations. In addition, one floating processor and two catcher processors purchased crabs after the season. The 2001 Bristol Bay red king crab fishery had an exvessel value of \$37.2 million, a slight increase from the 2000 fishery exvessel value of \$36.0 million (Table 5-2, Figure 5-3).

Very poor weather conditions on October 17th resulted in the death of one fisher, injury to a number of other fishers and damage to several vessels. As a result of the death of a crewmember, one vessel was not able to retrieve a significant portion of its fishing gear. The owner of this vessel requested that the department permit the vessel to return to the fishing grounds and retain for sale all legal king crab remaining in the gear. It was determined that the Alaska Board of Fisheries (BOF) had not delegated this authority to the department, thus the request was denied. After the initial request was denied, the owner petitioned the BOF to adopt an emergency regulation permitting him to retain king crab in a closed registration area. The BOF met via teleconference on October 21 and adopted an emergency regulation delegating the commissioner authority to issue a permit to the owner of a vessel that has experienced a major mechanical breakdown or accident involving the death of a crewmember or serious injury to multiple crewmembers to retain legal king crab for sale in a closed registration area.

ADF&G personnel or observers contacted approximately 75% of Bristol Bay red king crab vessel operators for postseason interviews. Biological data were collected from the majority of these deliveries. Size data were collected indicating that a slight majority (54%) of the harvest was composed

of recruit sized crabs. In 2000, 65% of the catch was composed of recruits. Landed red king crabs averaged 151 mm in carapace length which is the same as in 2000 (Table 5-6).

The Department of Public Safety (DPS) stationed personnel in all ports where Bristol Bay red king crabs were landed except Adak and cited five vessel operators for possession of undersized crab. DPS seized 9,033 pounds of illegal king crab valued at approximately \$44,000.

Prior to the 2001 general red king crab fishery in Bristol Bay, ADF&G conducted cost recovery fishing on a chartered vessel. This cost recovery fishery, which harvested and sold approximately 30,000 pounds of red king crabs (Table 5-7), worth approximately \$155,000 (Table 5-8), is an ongoing program used to collect funds to conduct research on Bering Sea shellfish and to fund pre-season practicum examinations for trainee observers. In addition, further cost-recovery fishing took place after the general fishery and an additional 90,000 pounds of red king crabs worth approximately \$466,000 were taken to fund that portion of the shellfish observer program.

Status of Stocks

The status of the Bristol Bay red king crab stock and fishery are evaluated with the use of abundance based thresholds. When the total mature biomass (TMB) of red king crabs in Bristol Bay falls below the 44.8 million pound minimum stock size threshold (MSST), the stock is considered overfished. In 2001, the TMB of red king crabs in Bristol Bay was estimated to be 88.0 million pounds, which is very close to the maximum sustained yield (MSY) value of 89.6 million pounds TMB. Relative to federal FMP (NPFMC 1998) and state harvest strategy reference points and thresholds, the Bristol Bay red king crab population is healthy, but relative to historic abundance the stock remains at low levels.

The state harvest strategy for Bristol Bay red king crabs establishes three thresholds that must be met prior to a fishery opening. The first is a threshold abundance level of 8.4 million mature females, the second is an ESB threshold of 14.5 million pounds of ESB and the third is a minimum GHLL threshold of 4.0 million pounds. Length based analysis estimates for 2001 show the stock to be above both the mature female abundance threshold at 21.2 million females and the ESB threshold at 40.6 million pounds of ESB. Mature female abundance increased 22% from the 2000 level, while ESB remained relatively stable.

Both legal and pre-recruit males decreased in abundance by 41% over the 2000 level. At 5.1 million crabs, legal male abundance is 68% of the previous 20-year average (Rugolo, et al. 2001). Low recruitment in recent years has contributed to the increasing occurrence of post-recruits and old-shell crabs in the commercial fishery. Following the 1999 fishery when 72% of the harvest was composed of recruits, both average carapace length and weight have increased. Modest recruitment of males and females in the 90-110-mm size class was noted during the 2001 survey, but it is unlikely that legal and mature male recruitment from these individuals will be similar to that observed in 1998 and 1999. Given recent survey trends, decreases in mature female abundance, ESB and legal male abundance should be expected in 2002, however it is likely that fishery thresholds will be met and it is unlikely that the stock will fall below MSST.

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KING CRAB REGISTRATION AREA Q BERING SEA

Description of Area

The Bering Sea king crab Registration Area Q has as its southern boundary a line from 54°36' N lat., 168° W long., to 54°36' N lat., 171° W long., to 55°30' N lat., 171° W. long., to 55°30' N lat., 173°30' E long., as its northern boundary the latitude of Point Hope (68°21' N lat.), as its eastern boundary a line from 54°36' N lat., 168° W long., to 58°39' N lat., 168° W long., to Cape Newenham (58°39' N lat.), and as its western boundary the United States-Russia Convention Line of 1867 (Figure 5-4). Area Q is divided into the Pribilof District, which includes waters south of Cape Newenham, and the Northern District, which incorporates all waters north of Cape Newenham. The Northern District is subdivided into three sections: the Saint Matthew Island Section, which includes waters north of Cape Newenham and south of Cape Romanzof; the Norton Sound Section, which includes all waters north of Cape Romanzof, south of Cape Prince of Wales, and east of 168° W long; and the Saint Lawrence Island Section, which encompasses all remaining waters of the district.

PRIBILOF DISTRICT RED AND BLUE KING CRAB

Historic Background

The king crab fishery in the Pribilof District began in 1973, when vessels targeted blue king crabs *Paralithodes platypus* in the vicinity of St. George and St. Paul Islands. The first reported catch in this area was 1.3 million pounds taken by eight vessels between July 1973 and October 1974. The average weight of crabs harvested was 7.3 pounds and catch per unit effort (CPUE, defined as catch per pot pull), was 26 crabs. By the 1980/1981 season, fishing effort had increased to 110 vessels, which harvested 11.0 million pounds, the highest catch on record. However, by that time the fishery CPUE dropped to nine crabs and continued declining to a low of two crabs by the end of the 1986/1987 season. Consequently, the harvest dropped to 260,000 pounds, taken by 16 vessels (Table 5-9). Due to this six-year decline in harvest and concurrently low annual population estimates, the blue king crab fishery was closed beginning with the 1988/1989 season and remained closed until 1995 (Figure 5-5).

In 1993, the National Marine Fisheries Service (NMFS) summer trawl survey of the Bering Sea indicated a marked increase in the abundance of red king crabs *Paralithodes camtschaticus* around the Pribilof Islands. Although no threshold abundance level for opening the fishery was established for Pribilof District red king crabs, survey results indicated a harvestable surplus of male crabs. Consequently, a red king crab fishery in the Pribilof District opened for the first time in September 1993. A harvest of 2.6 million pounds was taken from a guideline harvest level (GHL) of 3.4 million pounds. In 1994, the Pribilof District was again opened to the commercial harvest of red king crabs, and 104 vessels harvested 1.3 million pounds.

In 1995, an increase in blue king crab abundance and a continued harvestable surplus of red king crabs resulted in a combined red and blue king crab GHL of 2.5 million pounds. Subsequent declines in red and blue king crab abundance over the next three years resulted in a combined GHL for 1998 of 1.25 million pounds (Table 5-10). Poor fishery performance during that time resulted in annual harvests below the fishery GHL. In 1999 and 2000, red and blue king crab abundance continued to decline and the Pribilof fishery remained closed.

In 1993, the Alaska Board of Fisheries (BOF) adopted regulations, which set pot limits based on overall vessel length, for all king crab fisheries in the Bering Sea. In the Pribilof District, pot limits were established at 50 for vessels over 125 feet overall length and at 40 for vessels 125 feet overall length or less.

Since 1993, season lengths have ranged from six to 14 days (Table 5-10). This compares to the eight-year period from 1980-1988 when season length ranged from 10 to 86 days. Due to shorter seasons since 1993, the Pribilof District fishery has been managed inseason using vessel catch reports. Reports are received via single side band radio every 24 hours, or marine satellite telex every 12 hours and are used to calculate CPUE and daily harvest. Inseason management of the fishery allows the department to base management decisions on actual, real-time fishery performance and to respond to changes in catch rates and weather.

The economic value of the Pribilof District red king crab fishery peaked at \$13.0 million in 1993 with an exvessel price of \$4.98 per pound, the second highest on record. The value of the Pribilof District blue king crab fishery peaked at \$13.6 million in 1981/1982, with an exvessel price of \$1.50 per pound. Since 1995, the exvessel price of red or blue king crabs has not exceeded \$3.37 per pound. Total value of the fishery declined from \$6.8 million in 1995 to \$2.4 million in 1998 (Table 5-10, Figure 5-6). The historic average weight of red king crabs in the Pribilof District is 7.8 pounds, slightly larger than the average weight of 7.5 pounds for blue king crabs (Table 5-9).

2001 Fishery

The blue king crab fishery in the Pribilof District remained closed for the 2001 season due to a continued decline in blue king crab abundance below the threshold level of abundance required for a fishery opening. Due to significant uncertainty surrounding estimated red king crab abundance and concerns for blue king crab bycatch in a directed red king crab fishery, the red king crab fishery also remained closed for the 2001 season. Poor fishery performance in the late 1990's added to concerns over the health of the red and blue king crab stocks.

Stock Status

The population of blue king crabs in the Pribilof District remains at its lowest level since 1989. Based on the 2001 survey, the abundance index for legal male blue king crabs decreased from 0.47 million crabs in 2000, to 0.38 million crabs in 2001. Abundance of pre-recruit male blue king crabs declined from 0.14 million crabs in 2000 to 0.09 million in 2001. Abundance of female blue king crabs increased from 1.4 million crabs in 2000 to 1.6 million in 2001. However, changes in female abundance of this magnitude are considered insignificant, as female blue king crab estimates are considered somewhat imprecise due to the rocky, untrawlable habitat which these crabs prefer (Rugolo et al. 2001). Overall, the population remains low and appears to be in a long-term decline.

The abundance index for legal male red king crabs in the Pribilof District increased from 1.16 million crabs in 2000 to 1.25 million in 2001. Female red king crab abundance increased even more dramatically, going from 0.6 million crabs to an estimate of 4.0 million. However, estimates of red king crab abundance are considered imprecise, as portions of the study area are untrawlable and do not produce accurate abundance estimates.

ST. MATTHEW ISLAND SECTION BLUE KING CRAB

Historic Background

The commercial blue king crab fishery in the St. Matthew Island Section of the Northern District was first exploited in 1977, resulting in a commercial harvest of 1.2 million pounds. In 1978, the catch

increased to almost 2.0 million pounds (Table 5-11). Catches decreased in 1979 and 1980 due to lack of effort. In 1981, several vessels returned to the St. Matthew Island Section during the Norton Sound Section fishery. Catches were good, and after the Norton Sound Section closed, additional vessels moved into the St. Matthew Section, taking 4.6 million pounds of blue king crabs. Catch and effort increased to a peak harvest of 9.5 million pounds in 1983 when 164 vessels participated. In subsequent seasons, catches remained at or below 5.0 million pounds (Figure 5-7).

NMFS trawl surveys between 1983 and 1999 in the St. Matthew Island Section of the Northern District indicated a harvestable surplus of blue king crabs ranging from 1.7 to 8.0 million pounds. In 1998, the legal male abundance decreased by 21%, resulting in a GHL of 4.0 million pounds. The 1998 season closed before the GHL was attained due to poor fishery performance and observer information indicating a relatively high incidental capture rate of sublegal males and female crabs. The 1998 CPUE was seven crabs per pot lift, the second lowest CPUE on record. The 1998 season, which was managed based on inseason catch reports, lasted 11 days, the longest since a 17-day opening that occurred in 1983, when 9.5 million pounds were harvested (Table 5-12). The actual harvest of 2.9 million pounds equaled the harvest projected from inseason catch reports (Table 5-13). In 1999 and 2000, the St. Matthew fishery remained closed because harvest strategy abundance thresholds were not met.

In 1993, the BOF adopted regulation changes and moved the opening date of the St. Matthew king crab fishery from September 1 to September 15 (Table 5-14), concurrent with the king crab fishery in the Pribilof District. This action was taken to improve effort distribution between the Pribilof and St. Matthew areas, thereby reducing the number of vessels participating in each fishery. Differential pot limits, established in 1993 for the St. Matthew Island Section, limited vessels over 125 feet overall length to 75 pots and vessels 125 feet overall length or less to a maximum of 60 pots.

The exvessel price for St. Matthew blue king crab in 1998 averaged \$1.87 per pound, the lowest on record since 1985, when fishers received \$1.60 per pound (Table 5-12). The total value of the 1998 fishery was \$5.3 million, a reduction from the \$9.8 million fishers received the previous year and a 64% decrease from the 1994 value of \$15.0 million (Figure 5-8). Average weight per crab has ranged from 4.0 to 5.0 pounds, fluctuating with the percentage of recruits entering the fishery each year. The average weight per crab in the 1998 fishery was 4.7 pounds (Table 5-11).

2001 Fishery

The 2001 St. Matthew Island Section blue king crab fishery remained closed because the GHL calculated from the harvest strategy was below the minimum GHL threshold specified in regulation.

Stock Status

Based on the 2001 NMFS survey, the abundance index for legal male blue king crabs increased from 0.8 million crabs in 2000 to 1.1 million crabs in 2001. Abundance of pre-recruit male blue king crabs

increased from 0.3 million crabs in 2000 to 0.6 million in 2001. Abundance of female blue king crabs increased from 0.1 million crabs in 2000 to 0.2 million in 2001 (Rugolo et al. 2001). Spawning biomass in 2001 was estimated at 9.0 million pounds, below the minimum stock size threshold of 11.0 million pounds established for this stock. As defined by the Bering Sea and Aleutian Islands King and Tanner Crab Fishery Management Plan and the Magnuson-Stevens Fishery Conservation and Management Act, this fishery is considered overfished and a rebuilding plan has been adopted.

The rebuilding plan has three components: a harvest strategy, bycatch control measures, and habitat protection. In previous years when there was a directed fishery, harvest rates for St. Matthew blue king crab were established at 20% of the mature male abundance. In March 2000, BOF adopted a modified harvest strategy which includes four components: (1) a minimum stock threshold of 2.9 million pounds of mature male biomass, (2) a minimum GHL of 2.5 million pounds, (3) variable mature male harvest rates based on the mature male biomass level, and (4) a cap of legal male harvest rate at 40% (Zheng and Kruse 2000). To reduce mortality associated with crab bycatch, the BOF adopted gear modifications measures that require each pot to be fitted with either 5.8-inch diameter escape rings or 8-inch stretch mesh on at least one-third of one vertical surface of the pot. To further reduce bycatch of females during the St. Matthew blue king crab fishery, the BOF also closed fishing in the areas in which egg-bearing females have historically been found during preseason pot surveys and in observer pot samples. The area within state waters around St. Matthew Island, Hall Island, and Pinnacle Island has been identified as habitat that is necessary for the long-term maintenance of the St. Matthew Island blue king crab stock and is therefore closed to crab fishing. In addition, in consultations on any proposed non-fishing activities, the importance of blue king crab essential fish habitat (EFH) in maintaining stock productivity will be emphasized, and to the extent feasible and practicable, this area should be protected from adverse impacts.

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PRIBILOF DISTRICT GOLDEN KING CRAB

Historic Background

Golden king crab *Lithodes aequispina* are found in only a few deep canyons in the Bering Sea District and have never sustained large harvests when compared to other Bering Sea king crab fisheries. As with many other crab fisheries in the Bering Sea, the fishery for golden king crabs was pioneered by foreign

fishing fleets. A domestic fishery developed during the 1982/83 season after BOF directed ADF&G to open and close fishing for golden king crabs in the Pribilof District by emergency order (ADF&G 1984). By the 1984 season, BOF directed ADF&G to manage the Area Q golden king crab fishery under authority of a commissioner's permit that allowed the fishery to develop and expand into new areas (ADF&G 1985).

The first domestic harvest of golden king crabs in the Bering Sea occurred in June of 1982 when two vessels fished in the Pribilof District. Effort increased to 10 vessels during the following season with a harvest of nearly 70,000 pounds. The size limit for golden king crabs in the Pribilof District was reduced from six and one half inches to five and one half inches in 1983. Subsequently, effort in the Pribilof District peaked during the 1983/84 season when 50 vessels harvested 860,000 pounds of golden king crabs. Since the 1983/84 season, harvest has not exceeded 350,000 pounds annually (Table 5-15). The Pribilof District golden king crab fishery reached a maximum exvessel value of just over \$1 million in 1995 (Table 5-16). During the last 9 years in the Pribilof District fishery an average of five vessels have annually harvested an average of 166,000 pounds. Catch per unit of effort (CPUE) has averaged eight legal crabs per pot lift with an average weight of 4.0 pounds. Most harvest in the Pribilof District has occurred in the area immediately to the south of the Pribilof Island group.

The 2000 Pribilof District golden king crab fishery opened on January 1 with a GHL of 150,000 pounds. This GHL represents a reduction of 50,000 pounds from the 1999 harvest level. The adjustment was made to better comply with guidelines specified in the Fisheries Management Plan for the King and Tanner crab Fisheries of the Bering Sea and Aleutian Islands that specifies a maximum sustained yield (MSY) level of 300,000 pounds of male and female golden king crabs from the Pribilof District (NPFMC 1998). In 2000, six vessels participated in the directed fishery and a seventh registered to retain golden king crab bycatch during directed fishing efforts for grooved Tanner crabs *Chionoecetes tanneri*. The fleet harvested 127,217 pounds. The GHL was not reached, thus the fishery remained open until December 31, 2000.

2001 Fishery

The 2001 fishery opened January 1 with a GHL of 150,000 pounds, and closed by emergency order on April 15. Fishing effort began in February when one vessel registered and by March, six vessels were participating. The fleet harvested 145,876 pounds (Table 5-15). CPUE ranged from 6 to 11 legal crabs per pot lift and averaged eight, an increase from a CPUE of five during the 2000 fishery. Weekly landings ranged from zero to just over 45,000 pounds and averaged approximately 16,000 pounds per week. Landed crabs averaged 4.3 pounds per crab, a decrease of 0.1 pounds from the 2000 season. Most of the 2001 harvest occurred immediately to the south and southwest of Saint George Island (Table 5-17). Three shore-based plants in Dutch Harbor paid the fleet an average of \$3.12 per pound for live crabs. The 2001 Pribilof District golden king crab fishery had a total fishery value of \$429,464 (Table 5-16).

NORTHERN DISTRICT GOLDEN KING CRAB

Historic Background

A domestic fishery for golden king crabs in the Saint Matthew Island Section of the Northern District also began in the 1982/83 season. Effort and harvest in the Northern District has been sporadic. Since the initial fishery, harvest has only been documented during nine seasons. Harvest peaked during the 1987 season when 11 vessels harvested 424,394 pounds (Table 5-18). The majority of the golden king crab harvest in the Northern District occurred west of Saint Matthew Island. There has been no documented harvest of golden king crabs from either the Saint Lawrence Island or Norton Sound Sections.

At its March 1993 meeting, BOF developed pot limits for all king crab fisheries in the Bering Sea. Current pot limits in the Northern District are set at 60 pots for vessels 125' or less in length and 75 pots for vessels greater than 125' in length. These pot limits are significantly lower than the average number of pots fished per vessel in the Aleutian Islands golden king crab fishery, which has no pot limits in place. The Northern District fishery has never been closed by emergency order (Table 5-19).

2001 Fishery

The fishery opened January 1 with a GHF of 10,000 to 20,000 pounds, and closed December 31, 2001. One vessel registered to fish for golden king crabs in the Northern District of Area Q during 2001; therefore, the harvest is confidential.

Fishery Management and Stock Status

Effective January 1, 2001, one hundred percent observer coverage was required for each vessel registered for the fishery to provide fishery and biological data that has not previously been available. The golden king crab fishery in the Bering Sea is managed using inseason catch reports provided by processors and observers. In addition, vessel logbooks issued with the commissioner's permit provide location of fishing operations, effort, and estimates of bycatch. Primary bycatch species include non-retained golden king crabs, halibut, Pacific cod and snow crabs. Fishing is restricted to depths 100 fathoms or greater.

The golden king crab population in the Bering Sea is not currently surveyed and no estimate of abundance has been made. There are currently no plans to survey this population, nor has a harvest strategy been developed. Population size is believed to be limited by the amount of available habitat in the Bering Sea.

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BERING SEA SCARLET KING CRAB

Historic Background

Scarlet king crabs *Lithodes couesi* are harvested under authority of a permit issued by the commissioner of ADF&G authorized in 5 AAC 34.082 PERMITS FOR *LITHODES COUESI* KING CRAB. Harvest of scarlet king crabs in the Bering Sea has primarily occurred as incidental harvest in the grooved Tanner crab and golden king crab fisheries. Although vessels first registered to fish for Bering Sea scarlet king crabs in 1992, no commercial landings occurred prior to 1995. In 1995, four vessels harvested 26,684 pounds and were paid an exvessel price of \$2.12 per pound. Only two vessels participated in 1996, consequently all catch information is confidential. No vessels registered to fish for scarlet king crabs from 1997 to 1999. A single vessel was permitted to retain scarlet king crab incidental harvest during the grooved Tanner crab fishery in 2000, thus the harvest information is confidential (Table 5-20). Scarlet king crab incidental harvest was permitted at a rate of 5% of the weight of the target species.

2001 Fishery

Only one vessel was permitted to retain scarlet king crab incidental harvest in 2001, therefore the harvest is confidential.

Fishery Management and Stock Status

No annual abundance estimates are available for scarlet king crab stocks, nor have any stock assessment surveys targeted them. Onboard observers have been required on most vessels targeting deepwater crab species since 1994 and have collected information detailing the size and sex composition of the retained and non-retained scarlet king crab and bycatch species. This information will be used to help develop management measures for these stocks in the future. Currently, ADF&G does not intend to register any vessels to fish directly for scarlet king crabs in the Bering Sea pending BOF adoption of the Plan for the Development of New Fisheries In Alaska. Any additional directed

fishing for scarlet king crabs will be conducted in accordance with that plan. Retention of scarlet king crabs captured in other deepwater crab fisheries will be permitted at low levels.

BERING SEA TANNER CRAB MANAGEMENT DISTRICT

Description of Area

The Bering Sea District of Tanner crab Registration Area J includes all waters of the Bering Sea north of Cape Sarichef at 54°36' N lat. and east of the U.S.-Russia Convention Line of 1867. This district is divided into the Eastern and Western Subdistricts by a line at 173° W long. The Eastern Subdistrict is further divided at the latitude of Cape Romanzof and 168° W long. into the Norton Sound section to the east and the General Section to the west (Figure 5-9).

BERING SEA TANNER CRAB

Historic Background

The first reported catches of Tanner crabs *Chionoecetes bairdi* occurred in 1968, incidental to the harvest of red king crabs *Paralithodes camtschaticus* in Bristol Bay. In 1974, a directed Tanner crab fishery began. Harvest peaked at 66.6 million pounds during the 1977/78 season. In the fall of 1978, the National Marine Fisheries Service (NMFS) predicted sharp declines in Tanner crab abundance beginning with the 1978/79 fishing season. As anticipated, Tanner crab stocks declined, and by 1984, the commercial harvest fell to 1.2 million pounds. Further stock declines led to a fishery closure during the 1986 and 1987 seasons (Table 5-21, Figure 5-10).

In 1992, in an effort to slow the harvest rate to provide sufficient time for inseason management of the Tanner crab fishery, the Alaska Board of Fisheries (BOF) adopted regulations which restricted all participating vessels to fishing a maximum of 250 pots. In 1993, in order to comply with federal law regarding application of pot limits in a nondiscriminatory manner, differential pot limits based on vessel length were implemented. Vessels 125 feet or under in overall length were limited to a maximum of 200 pots, while vessels longer than 125 feet in overall length were limited to a maximum of 250 pots.

Also in 1993, BOF adopted regulations which opened and closed that portion of the Eastern Subdistrict east of 168° W long. to Tanner crab fishing concurrent with the regulatory opening and emergency order closure of the Bristol Bay red king crab fishery. BOF mandated a reopening of the Eastern Subdistrict between 163° and 173° W long. for the directed Tanner crab fishery 10 days after the closure of the Bristol Bay red king crab fishery. In the event the Bristol Bay red king crab fishery failed to open, the portion of the Eastern Subdistrict west of 163° W long. would open to a directed Tanner crab fishery on November 1. These BOF actions were based on observer bycatch data and historic

harvest patterns which indicated the majority of female king crab bycatch in the Bristol Bay red king crab and Bering Sea Tanner crab fisheries came from waters east of 163° W long.

During the 1994 and 1995 seasons, the Bristol Bay red king crab fishery did not open due to low stock abundance. As a result, the Tanner crab fishery opened on November 1 in that portion of the Eastern Subdistrict west of 163° W long. The commercial Tanner crab harvest in 1994 was 7.8 million pounds; in 1995 the harvest declined to 4.2 million pounds (Table 5-22).

The guideline harvest level (GHL) for the 1996 Tanner crab fishery was 8.4 million pounds (Table 5-23). Due to poor fishery performance, the fishery was closed before the GHL was reached; a total of 1.8 million pounds was harvested (Table 5-21, Figure 5-10). The average size of crabs harvested in 1996 was 152.1mm carapace width (CW). This compares to an average of 149.3mm CW observed in 1995. The percentage of new-shell crabs harvested in 1996 decreased to 46.6 percent from 58.6 percent observed in the 1995 harvest (Table 5-24).

Based on poor fishery performance in 1996 and results from the 1997 NMFS survey indicating significant declines in most segments of the Tanner crab population (Stevens et al. 1998a), the Bering Sea Tanner crab fishery remained closed for the 1997 season. The 1998 NMFS survey indicated further declines in Tanner crab abundance and the fishery did not open in 1998. Abundance of large male and female Tanner crabs continued to decline to the lowest level in the history of the survey (Stevens et al. 1998b). Because the stock fell below the minimum stock size threshold established in the FMP for this fishery, the stock was declared overfished by NMFS in 1998, necessitating establishment of a rebuilding plan.

At the March 1999 BOF meeting, a revised harvest strategy was adopted as part of a comprehensive Bering Sea Tanner crab rebuilding plan. The harvest strategy for the Eastern Subdistrict specifies a threshold of 21.0 million pounds of mature female biomass which, for management purposes, are females \geq 80mm CW. No directed crab fishery is prosecuted when female biomass is below that threshold. When the mature female biomass is between 21.0 million and 45.0 million pounds, a maximum harvest rate of 10% is applied to “molting mature males”, or those mature male crabs likely to continue to grow, defined as 100% of new-shell and 15% of old-shell males greater than 112mm CW. When the mature female biomass is above 45.0 million pounds the harvest rate is set at a maximum of 20% of molting mature males.

When establishing a GHL, no more than 50% of the exploitable legal-size male abundance may be harvested. Exploitable legal-size male abundance is 100% of new shell and 32% of old-shell male crabs greater than 140mm CW. Separate GHLs are calculated for the areas east and west of 166° W long. The minimum fishery threshold is 4.0 million pounds. If the fishery is not opened because it did not meet threshold requirements, the fishery may reopen the following season if a GHL of at least 8.0 million pounds is calculated through the harvest strategy, but only half of the GHL may be taken that year. If the fishery remains closed because the GHL is calculated to be greater than 4.0 million pounds, but less than 8.0 million pounds, the fishery may reopen the following year if the calculated GHL is at least 4.0 million pounds. This safeguard was established to protect against survey bias in the year following a closure due to low stock abundance.

In 1998, pre-recruit crabs began to show an increase, a trend which was also observed in 1999. However, the stock remained below fishery threshold level established in the revised harvest strategy and the area remained closed in 1999 and in 2000.

2001 Fishery

Harvest strategy thresholds were not met in 2001; thus the Bering Sea Tanner crab fishery remained closed for the 2001 season.

Status of Stocks

The abundance of *C. bairdi* Tanner crab continues to be below levels to allow for a fishery. The Alaska Board of Fisheries harvest strategy threshold of mature female crabs for a fishery opening is 21 million pounds. ADF&G and NMFS analysis of the 2001 NMFS trawl survey estimated the mature female biomass at 15.5 million pounds, a slight decrease from the 2000 mature female biomass estimate of 15.9 million pounds. The stock remains in an overfished condition (Rugolo et al. 2001).

BERING SEA SNOW CRAB

Historic Background

The first commercial landings of snow crabs *Chionoecetes opilio* from the Bering Sea were recorded in 1977, incidental to the harvest of Tanner crabs. In 1981, a reduction in the Tanner crab harvest resulted in increased snow crab harvest. The harvest of snow crabs fell from 52.8 million pounds in 1981 to 26.1 million by 1983 (Table 5-25, Figure 5-11). In 1984, harvest increased slightly, and in 1985, 66 million pounds were landed. In 1986, the harvest increased to 98.0 million pounds. The commercial catch continued to increase annually to a high of 328.6 million pounds in 1991. Although stocks began to decline, the harvest of snow crabs remained over 100 million pounds through the 1994 season. In 1996, the harvest declined to 65.7 million pounds, the lowest in the preceding eleven seasons. The GHL more than doubled in 1997 to 117.0 million pounds and the fleet harvested 119.5 million pounds. In the 1998 general fishery, 229 vessels harvested 243.3 million pounds. Twenty one vessels in the Community Development Quota (CDQ) fishery, first implemented in 1998, harvested an additional 8.9 million pounds of snow crabs.

The National Marine Fisheries Service (NMFS) stock assessment survey in 1998 indicated that the estimate of large male snow crabs declined by 17% from the prior year's survey, resulting in a general fishery GHL of 186.2 million pounds. Two hundred and forty one vessels landed 184.5 million pounds during the general fishery, that ended on March 22. An additional 9.67 million pounds were harvested by 23 vessels in the CDQ fishery, which occurred after the general fishery.

In 1999, the surveyed stock was 60% of the minimum stock size threshold, defined as half the long term average mature biomass established in the Federal Fishery Management Plan (FMP) for Bering Sea and Aleutian Islands King and Tanner Crab. In response to significant stock declines, ADF&G initially reduced the 58% exploitation rate on 102 mm (4") CW and larger male snow crabs by 50%. The revised 29% exploitation rate would still have resulted in a removal rate from the estimated mature biomass close to the long-term average. Thus, in accordance with NMFS guidelines for stock rebuilding, the harvest rate was reduced by an additional 25% to 22%, which also took into consideration handling mortality during the fishery and high natural mortality during the 6-month hiatus between the survey and the fishery opening. This reduction in exploitation rate resulted in a GHF of 28.5 million pounds for the 2000 season. Of this total, 2.1 million pounds (7.5%) was allocated to the CDQ fishery, resulting in a 26.4 million pound GHF for the general fishery.

The 2000 snow crab fishery was scheduled to open by regulation at noon on January 15. However, by early January, a significant portion of the fishing grounds were ice covered. The Alaska Department of Fish and Game (ADF&G) and industry had concerns about potential gear conflicts and gear loss due to sea ice and vessel interactions because of the limited fishing area. ADF&G was also concerned with the handling effects and the potential for increased handling mortality and limb loss of captured crabs in a derby-style fishery under extreme weather conditions. ADF&G received input from representatives of the crab industry and the majority indicated a desire to delay the season. The U.S. Coast Guard was also in favor of delaying the season due to vessel safety concerns during severe vessel icing conditions. On January 7, ADF&G announced by news release that the fishery would be delayed and would not open prior to April 1, and that two weeks advance notice would be provided to industry prior to an opening. On March 7, ADF&G issued a news release defining criteria that would be used to open the fishery. These criteria, developed with input from industry, specified that at least 50% of the fishing grounds had to be ice free at the time of the opening, and that the ice edge at 167° W long. could be no further south than 58° N lat. On March 15, ADF&G issued a news release indicating opening criteria had been met and that the fishery would open at noon on April 1.

The 2000 general fishery opened at noon on April 1 and closed at noon on April 8 (Table 5-26). A total of 230 vessels, including nine catcher processors, registered and received tank inspections in Akutan, Dutch Harbor, King Cove and Saint Paul Island. In addition, five floating processors registered to purchase and process crabs on the grounds during the fishery. In 1999, 241 vessels, including 10 catcher-processors, participated along with 11 floating processors.

Due to the relatively small GHF, management of the 2000 fishery was based on daily inseason reports from fishers. A total of 75 vessel operators or 34% of the fleet reported numbers of pots fished and number of crabs retained daily. Reports were received via marine telex and over single side band radio every 24 hours and were used to generate inseason estimates of harvest.

Catch projections indicated that the daily harvest ranged from less than 0.2 million pounds on the first day of the fishery to over eight million pounds on the final day of the season. The projected harvest based on inseason reports, was estimated to be 31.3 million pounds. The actual harvest of 30.8 million pounds exceeded the 26.4 million pound GHF by 17%.

Daily catch per unit of effort (CPUE), in numbers of retained crabs per pot pull, ranged from 31 on the first reporting day to 149 on the day prior to the closure. Projected CPUE based on inseason reports was 129. The actual CPUE for the 2000 fishery, based on post season fish ticket analysis, was 137. Overall fishery CPUE for the 1999 fishery was 158 retained crabs per pot.

Based on inseason reports, fishers made a total of 173,064 pot pulls throughout the course of the seven day 2000 fishery. The average number of pot pulls per day was 24,700 and ranged from 2,241 on the first day of the fishery to 43,905 on the day of the closure. In comparison, the 1999 fishery lasted 66 days and the average number of pots pulled per day was 13,621.

Harvest from the Eastern Subdistrict was 20.9 million pounds from 217 landings, or 68% of the total harvest. In recent years the majority of the harvest has occurred in the Eastern Subdistrict. Total harvest from the Western Subdistrict was 9.8 million pounds from 91 landings. The majority of the Eastern Subdistrict harvest came from six statistical areas surrounding the Pribilof Islands. The majority of the harvest in the Western Subdistrict came from four statistical areas along the 100 fathom contour, between 173° and 174° W long. In both subdistricts the majority of the harvest came from areas which have, in recent years, contributed the majority of the harvest.

Analysis of observer and dockside sampling data indicated an average weight of 1.3 pounds for crabs landed during the 2000 fishery. New-shell crabs made up 95.2% of the harvest. In 1999, new-shell crabs made up 97.7% of the harvest and the overall average weight was 1.3 pounds. Crabs under 102 mm (4", the industry minimum size) made up 5.3 percent of the 2000 harvest. This compares to 23.3, 21.1, 9.7 and 13.7% of crabs less than 102 mm CW harvested during the 1996, 1997, 1998 and 1999 seasons, respectively.

The exvessel price for snow crabs harvested in the 2000 fishery was two-tiered due to concerns for higher than normal old-shell crabs expected in the catch. Fishers were offered \$1.85 per pound for clean, new-shell crabs and \$1.00 per pound for old-shell, dirty or dark crabs. Fishers reported encountering high percentages of old-shell crabs in the first two days of the fishery, but thereafter located areas which contained predominantly new-shell animals. As a result, less than 10% of crabs landed were old-shell animals. Based on an average exvessel price of \$1.81 per pound, the 2000 snow crab fishery was worth \$55.1 million. This compares to an exvessel price of \$0.88 per pound and an overall fishery value in excess of \$161 million in 1999.

2001 Fishery

The 2001 Bering Sea snow crab *C. opilio* general fishery opened by regulation at noon on January 15 and closed by emergency order at 11:59 PM on February 14. The fleet harvested 23,382,046 pounds, or 92% of the 25.3 million pound guideline harvest level (GHL). The Community Development Quota (CDQ) snow crab fishery occurred subsequent to the general fishery and is detailed in the CDQ portion of this report.

Analysis of the 2000 National Marine Fisheries Service summer trawl survey of the Eastern Bering Sea indicated a 19% decrease in the abundance of large (≥ 4 inch cw) male snow crabs from the 1999 survey. However, small (< 4 inch cw) male and large (≥ 50 mm cw) female abundance increased 100% and 212%, respectively. Due to the large increase in both small male and large female abundance, the spawning biomass, currently estimated at 472.7 million pounds, is slightly above the minimum stock size threshold of 460.8 million pounds.

In the spring of 2000, the Board of Fisheries adopted a harvest strategy specifying a stepped harvest rate on mature male crabs that is dependant on estimated spawning biomass and that would rebuild the stock. The rebuilding plan specifies an exploitation rate of 16.875% of the mature male biomass when the spawning biomass is between 460.8 and 921.6 million pounds, resulting in a GHF for the 2001 season of 27.3 million pounds with 25.3 available to the general fishery and 2.0 million pounds allocated to the CDQ fishery.

A total of 207 vessels, including 7 catcher processors participated in the 2001 fishery. Three floating processors also registered and purchased crabs on the grounds during and after the fishery. A total of five shore based processors in Dutch Harbor, two in Saint Paul, one in King Cove and two in Kodiak also purchased and processed snow crabs. In 2000, a total of 231 vessels, including 9 catcher processors were tank inspected. Five floating processors and 13 shore based processors purchased crabs in 2000.

Quick Registration was available in the ports of Dutch Harbor, King Cove and Akutan. ADF&G personnel inspected vessel tanks and gear in the five days prior to the start of vessel registration on January 13. Inspected vessels were eligible to have their registrations signed and validated by ADF&G staff stationed at most major processors on January 13. ADF&G staff registered 130 vessels in Dutch Harbor, 30 in King Cove and 17 in Akutan. The quick registration process is not available in Saint Paul and an additional 30 vessels were registered there on January 14.

Given the relatively small GHF and anticipated short duration fishery, the department chose to manage the 2001 fishery using daily inseason catch reports from participating vessel operators. Approximately 54 vessels (25% of the fleet) provided daily harvest and effort reports. In addition to voluntary catch reporting, the department received catch information from observers stationed on seven catcher vessels, and all eight catcher-processors and three floating-processors.

Because of lengthy price negotiations, most catcher vessels did not begin fishing until 4:00 PM on February 3. As a result, harvest for the first 18 days of the season, 2.2 million pounds, was taken almost entirely by catcher-processor vessels. Catch projections based on inseason reports indicate that daily harvest ranged from less than 60,000 pounds reported on January 17 to over 2.7 million pounds reported on February 12 and February 14. The closure announcement, made over single side band radio and distributed by email and fax, was released to the public at 6:30 PM on February 12, providing the fleet with 54 hours advance notice of the closure. Based on the inseason reports through February 12, it appeared that the 25.3 million pound GHF would be reached by the closure, however, fleet efficiency was reduced by poor weather that developed after the closure announcement was made. As

a result, catch projections based on reports received after the fishery closure indicated that the total harvest would fall short of the GHF at approximately 23 million pounds (Table 5-27).

Fishery performance, in numbers of crabs per pot pull (CPUE), increased from 101 on January 17 to 201 on January 27 and then declined throughout the remainder of the fishery. Daily CPUE remained below 100 in the final 10 days of the fishery. Average CPUE for the 30 day fishery was 97, a significant reduction from the 2000 average CPUE of 137 crabs per pot lift. The fleet pulled 176,930 pots during the course of the fishery. The average number of pot pulls per day for the fleet was 5,898 and ranged from 406 on January 17 to 26,415 on February 14. In 2000, fishers pulled a total of 170,064 pots and the fleet averaged almost 24,300 pot pulls per day (Table 5-25).

Approximately 54% of the 2001 snow crab harvest occurred in the Eastern Subdistrict. Historically, the majority of the snow crab harvest has occurred in the Eastern Subdistrict, however in 2000 and 2001, an increasing portion of the catch was harvested in the Western Subdistrict (Table 5-28). In 2001, the majority of the harvest occurred along the eastern edge of Zemchug Canyon and along the 100 fathom contour west of the Pribilof Islands. Other significant harvests occurred southeast of Saint George Island near the Pribilof Canyon. Compared to recent seasons, very little snow crab was harvested east of 168° W long (Table 5-29).

The average weight of snow crabs landed during the 2001 fishery was 1.4 pounds, a slight increase over the 2000 average weight of 1.3 pounds per crab. In the Eastern Subdistrict, landed snow crabs had an average weight of 1.4 pounds while snow crabs landed from the Western Subdistrict averaged 1.3 pounds. The catch was composed of 95.2% new-shell crabs, the same as in 2000. Landed snow crabs had an average carapace width of 111.3 mm, the same as in 2000 (Table 5-30).

The exvessel price for snow crabs initially offered by processors on January 13 was \$1.37 per pound. This offer was not accepted by the catcher vessel fleet. The fleet met daily to consider price offers by processors. A price of \$1.50 per pound was offered on January 29. This offer was not accepted by the fleet. On February 1, fishers accepted \$1.55 per pound. At that time fishers agreed to wait 48 hours before setting any gear. This stand down period was intended to provide travel time to the fishing grounds for those vessels in Dutch Harbor and King Cove and to maintain a fair start for all vessels. The average exvessel price per pound in 2001 was \$1.53, resulting in a total fishery value of \$32.2 million, a significant decrease from the 2000 fishery value of \$55.1 million (Table 5-31).

The majority of vessels delivered to floating processors on the grounds, or to shore processors in the Pribilof Islands, Akutan or Dutch Harbor. However, 24 vessels checked out of the registration area to King Cove and Kodiak. In 2000, 19 vessels delivered to King Cove and 11 vessels checked out to Kodiak. Processing operations were completed at AFA processors by February 22 however, non AFA processors did not complete operations until February 26. No AFA processors reported reaching their processing caps in 2001. Due to the extended time required to complete processing, a number of vessels were unable to return to the fishing grounds to retrieve their fishing gear in the 10 days allowed by regulation. This situation also occurred following the 2000 fishery. Due to processing delays, vessels that were unable to remove their fishing gear from the grounds within 10 days, were not cited by the Division of Fish and Wildlife Protection.

Weather conditions in the Bering Sea throughout the 2001 fishery were very unfavorable. Several storms, some generating hurricane force winds, combined with large tides to produce extremely dangerous sea conditions. Several vessels lost wheelhouse windows and experienced other structural damage caused by large waves. Remarkably, no vessels or lives were lost during the 2001 fishery. Sea ice was not a major concern in 2001, and the main ice pack remained north of Saint Matthew Island throughout the fishery.

Status of Stocks

Analysis of the 1999 National Marine Fisheries Service (NMFS) summer trawl survey of the Eastern Bering Sea estimated the biomass of large (≥ 4.0 inches or 102 mm CW) male crabs at 94 million crabs, a 63% decrease from the prior year and well below the 20 year average of 170 million crabs. Approximately 70% of large male crabs were found in the Eastern Subdistrict (east of 173° W long.) compared to 83% in 1998. Small male crabs decreased 49%, while large (≥ 50 mm CW) female crab abundance decreased by 59% (Stevens, et al. 2000).

The Bering Sea snow crab stock fell below the minimum stock size threshold and was declared overfished in 1999. Since 1999, snow crab abundance in the Bering Sea has increased. The 2001 National Marine Fisheries Service trawl survey of the eastern Bering Sea estimated the large male snow crab abundance to be 77.5 million crabs, a 2% increase from the 2000 level. Despite this slight increase, the large male abundance is approximately 1/2 of the previous 10 year average.

Forty six percent of large males were found in the Eastern Subdistrict in 2001 which represents little change in distribution from 2000 when 46% were found there as well. In 1999, 70% of the large male snow crab abundance was recorded in the Eastern Subdistrict. Sixty three percent of large males were classified as having oldshells, compared to 72% in 2000.

Small males increased 114% in abundance to 282.1 million crabs. Small male abundance is strengthened by a strong size-frequency mode centered at 60-70 mm carapace width that was first observed in 2000 as 50-60 mm carapace width crabs. This recruitment event should yield increased legal male abundance in the coming years barring excessive natural mortality. Large females increased in abundance 3% to 1.5 billion crabs, a 3% increase from the 2000 level and the largest estimated large female population since 1995.

Only 26.7% of the total snow crab population was estimated to be in the Eastern Subdistrict in 2001. In 2000, 57% of the snow crab population was found in the Eastern Subdistrict. As large male abundance increases, snow crab abundance in the Eastern Subdistrict should increase.

Federal Fishery Management Plan and state harvest strategy requirements reference the total mature snow crab biomass which is defined as the biomass of all mature male and female snow crabs. In 2001 the total mature biomass of snow crabs in the Bering Sea was estimated to be 571 million pounds, a 21% increase over the 2000 level of 473 million pounds, but well below the Federal FMP defined rebuilt level of 921.6 million pounds.

Relative to FMP criteria, the Bering Sea snow crab stock remains below the rebuilt level and it is difficult to predict whether the recent increases in abundance will result in a total mature biomass that exceeds the rebuilt level, however it is likely that the 2002 survey results will meet state fishery thresholds.

BERING SEA GROOVED TANNER CRAB

Historic Background

The first reported landings of grooved Tanner crabs *Chionoecetes tanneri* from the Bering Sea occurred in 1988 after BOF established a special permit season for deepwater Tanner crabs during their spring meeting. In 1993, ADF&G restricted the harvest to male crabs with carapace width of 127 mm (5 inches) or greater. Differential pot limits, based on vessel size, were applied to vessels fishing for deepwater Tanner crabs in the Bering Sea in 1994.

To obtain biological information on grooved Tanner crabs, ADF&G implemented 100% onboard observer coverage in 1994. Effort and landings decreased when Tanner crab pot limits for the Bering Sea were applied to vessels fishing for deepwater Tanner crabs. At the March 1995 meeting, BOF determined that pot limits should not apply to the deepwater permit fisheries of the Westward Region. Effort increased significantly in 1995 to a harvest of over one million pounds with a fishery value exceeding \$1.3 million (Table 5-32).

In 1997, ADF&G set GHLS for grooved Tanner crabs that were based on prior harvest information. Historically, the Bering Sea, Alaska Peninsula, and Eastern Aleutian Districts supported the largest catches of grooved Tanner crabs. A GHL of 200,000 pounds was established for each of these districts. A GHL of 100,000 pounds was established in the Kodiak and Western Aleutian Districts to allow for exploratory fishing. Additionally, due to industry concerns about viability of undersized and female deepwater crabs released at sea, ADF&G began to require a minimum of two escape rings per pot with a minimum inside ring diameter of 4.5 inches. There were no vessels registered to fish grooved Tanner crabs in the Bering Sea District from 1997 to 1999, and in 2000, only one vessel registered.

2001 Fishery

A single vessel registered to fish for grooved Tanner crabs in the Bering Sea during the 2001 season; thus all catch information is confidential.

Stock Status

The grooved Tanner crab population in the Bering Sea District is currently not surveyed; subsequently no estimates of population abundance are available for this stock. Fishery data from the mid 1990s is

the primary source of information regarding abundance and stock status. Catch per unit effort declined from 11 legal crabs per pot lift in 1994 to three in 1996 and catches decreased from over 1,000,000 pounds in 1995 to 107,000 in 1996. In addition, fishing effort was concentrated in a few statistical areas immediately to the south of Saint George Island. This information indicates that at least in the area historically fished, the population was heavily exploited.

Given fishery performance and declining harvests of the mid 1990s, the department reevaluated deepwater Tanner crab harvest levels in 1999. A GHL range of 50,000 to 200,000 pounds was established for the Bering Sea District. The GHL was set as a range to provide greater flexibility for inseason management and to better inform the public of the department's management goals for the fishery. The fishery will be managed so that the upper end of the GHL range is reached only when catch rates similar to, or greater than those documented prior to the harvest declines of the mid 1990s are observed. In addition to new GHL requirements, the department specified that four 4.5" escape rings be placed on the lower third of each pot and required that pots be fished over multiple depth strata. Observers are required on each vessel registered for the fishery and will collect biological and fishery data.

BERING SEA TRIANGLE TANNER CRAB

Historic Background

Historically, triangle Tanner crabs *Chionoecetes angulatus* were taken as incidental harvest in the grooved Tanner crab fishery. Vessel operators have verbally reported retention of triangle Tanner crabs before 1994. In 1994, onboard observers documented a single incidence of triangle Tanner crab bycatch. Prior to 1995, there had been no documented commercial harvest of this species. In 1995, triangle Tanner crabs were the target species of two deliveries. In 1996, less than three vessels delivered triangle Tanner crabs as incidental harvest. No vessels registered to fish triangle Tanner crabs in the Bering Sea District from 1997 to 1999, and in 2000, only one vessel registered (Table 5-33).

2001 Fishery

Only one vessel registered to harvest triangle Tanner crabs in the Bering Sea District in 2001. The vessel was registered to retain triangle Tanner crab in the directed grooved Tanner crab fishery and all catch information is confidential.

Stock Status

Surveys of population abundance are not conducted for triangle crabs; thus the status of this stock is unknown. Due to the paucity of population level data for this species and the nature of the historical fishery, additional fishing for triangle Tanner crabs in the Bering Sea District will be limited to incidental

harvest during the grooved Tanner crab fishery. Vessels registered to fish for grooved Tanner crabs will be permitted to harvest triangle Tanner crabs at up to 50% of the weight of the target species as incidental harvest. This harvest level is consistent with the historic development of the fishery and allows retention of a deepwater species that is believed to have high bycatch mortality.

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MISCELLANEOUS SHELLFISH SPECIES BERING SEA

Description of Area

The Bering Sea portion of Registration Area J, as described herein for miscellaneous shellfish, includes all waters of the Bering Sea north of the latitude of Cape Sarichef at 54°36' N lat. and east of the U.S.-Russia Convention Line of 1867 (Figure 5-12).

Introduction

Miscellaneous shellfish species include hair crabs, sea urchins, sea cucumbers, snails, octopus and *Paralomis multispina*, a deepwater crab closely related to king crabs. These species have been harvested in relatively small amounts compared to the commercial king and Tanner crab fisheries in the Bering Sea. Prior to 1999, it was the policy of the Alaska Department of Fish and Game (ADF&G) to allow commercial fishing for miscellaneous shellfish species under authority of a commissioner's permit described in 5 AAC 38.062. PERMITS FOR OCTOPI, SQUID, HAIR CRAB, SEA URCHINS, SEA CUCUMBERS, SEA SNAILS, CORAL, AND OTHER MARINE INVERTEBRATES. Typically, permit conditions were general and not fully developed on an individual species basis. Fisheries for miscellaneous shellfish species occurred without prior knowledge of stock abundance or distribution and no harvest limits were established. To better regulate these types of fisheries, ADF&G is developing a plan for new and developing fisheries. Prior to the adoption of this plan, ADF&G will only register vessels for those fisheries which have an established guideline harvest level (GHL), or when sufficient data is available to develop a conservative GHL.

Those species of current or historic interest in the Bering Sea include octopus, *Paralomis multispina*, Dungeness crabs, and snails. North Peninsula shrimp do not fall under the miscellaneous species category but are included in this report due to low or infrequent annual harvests. The fisheries for shrimp and hair crabs in the Bering Sea District are described in separate reports.

Bering Sea Hair Crab

Description of Area

The Bering Sea hair crab fishery is prosecuted in an area that includes all waters north of 54°36' N lat., south of 60° N lat., east of the U.S.-Russia Convention Line of 1867, and west of 168° W long. (Figure 5-13). There is no formal hair crab registration area established in regulation, rather the fishing area is set using the terms of a commissioner's permit.

Historic Background

The fishery for hair crab *Erimacrus isenbeckii* in the Bering Sea was pioneered by the Japanese fleet during the 1960's and first commercially exploited by the U. S. fleet in 1978. In the early years of the U.S. fishery, the hair crab season was opened by emergency order concurrent with the Bering Sea Tanner crab fishery, however, by 1980 a year-round permit fishery had been established. Throughout the 1980s, harvest of hair crabs occurred primarily as incidental harvest in the Bering Sea Tanner crab fisheries. As interest in the fishery and market demand increased, ADF&G began to manage the fishery under conditions of a commissioner's permit. The commissioner's permit fishery was initiated in 1993 and under the permit conditions, all vessels fishing for hair crabs were required to carry an observer during all fishing activities (ADF&G 1996).

In 1996, due to a steady increase in the number of vessels participating in this fishery, the Alaska Legislature authorized the Commercial Fisheries Entry Commission to regulate vessel licenses in the Bering Sea hair crab fishery. Vessel qualification was based on participation in at least one of the qualifying years from 1992 to 1995. Licenses were issued to 23 vessels for those waters beyond five nautical miles of St. George and St. Paul Islands. Also included in this legislation were provisions which allow any vessel 58 feet and under to fish within five nautical miles of St. George and St. Paul Islands. In addition, it was the intent of the Legislature, expressed in the moratorium that BOF maintain 100% observer coverage on all vessels participating in the Bering Sea hair crab fishery. ADF&G exempted vessels under 44 feet in length from mandatory observer coverage because of observer safety considerations (ADF&G 1998).

Participation and harvest in the Bering Sea hair crab fishery has varied greatly over the history of the U. S. fishery. Effort and harvest reached a peak of 67 vessels and 2.4 million pounds in 1980 when the fishery was prosecuted as an incidental harvest fishery during the Tanner crab season (Table 5-34, Figure 5-14). Between 1987 and 1990 effort was minimal due to low stock abundance. Since the moratorium, effort has remained at 21 or fewer vessels and in 1997 only 16 vessels made landings. In the 1990s, harvest reached a peak of 2.3 million pounds in the 1993/94 season). The fishery reached a

peak exvessel value of \$5.7 million in 1995 (Table 5-35). Since 1995, both effort and GHL have been declining.

Beginning in 1993, the hair crab fishing season opening date was set at November 1, which conflicted with the Bristol Bay red king crab fishery. In 1998, ADF&G solicited comments from industry regarding a new opening date. A consensus was reached that the fishery would open 10 days after the closure of the Pribilof District or St. Matthew Island Section king crab fisheries, whichever closed later. The fishery opened on October 8 in 1998. In 1999, BOF changed the Bristol Bay red king crab season opening to October 15; thus the hair crab fishery was again in conflict. Consensus was reached with industry to conduct the fishery 10 days after the closure of the Bristol Bay red king crab fishery.

The 1999 Bering Sea hair crab fishery opened by commissioner's permit at 12:00 noon, October 30, with a GHL of 283,000 pounds. The GHL was established using results of the National Marine Fisheries Service Bering Sea trawl survey. Since there are no registration, district or section areas established in regulation for hair crab, survey results are described in terms of Bering Sea king crab registration areas, districts and sections (Figure 5-4). Because confidence in the results of this survey is relatively low, a 20% fishery exploitation rate was used to determine the GHL. Male hair crab ≥ 3.25 " CW are defined as legal crabs in the commissioner's permit for this fishery.

Eight vessels registered for the 1999 fishery. All registered vessels were greater than 58' in length and therefore were required to carry an observer during all fishing activities and fish exclusively outside of five miles. Observers reported catch, effort and bycatch data to ADF&G in Dutch Harbor three times per week. Initially, CPUE was 2.0 legal crabs per pot lift, but then declined to 1.5. CPUE fluctuated between 1.0 and 1.7 legal crabs per pot lift until November 22 when it dipped below 1.0 where it remained until the fishery closure. The fleet harvested an average of 6,687 pounds per day. Ninety-nine percent of the 1999 harvest was taken from two statistical areas.

The average weight was 1.6 pounds and ranged from 1.4 to 1.7 pounds, well below the historic high average weight of 2.2 pounds per crab observed in the 1980/81 fishery.

In previous seasons the practice of discarding legal hair crabs at sea because of product quality had been a concern to the department. In addition, the hair crab fishery typically occurs after the closure of the Pribilof District king crab fishery. Bycatch of Pribilof red and blue king crabs in hair crab pots is a concern to the department. In 1999, observers reported that approximately 15,500 pounds of legal hair crabs were discarded at sea, which compares favorably to the 28,000 pounds discarded in 1998. Bycatch of red and blue king crabs was greatly reduced from the 1998 level. The fleet incidentally caught 1,425 king crabs, or 10 king crabs per 1,000 legal hair crabs, compared to a bycatch of 9,000 king crabs in 1998. Average exvessel price per pound was \$3.20 per pound, which yields a total fishery exvessel value of approximately \$694,000.

The 2000 Bering Sea hair crab fishery was substantially different than any previous hair crab fishery in the Bering Sea. For the first time, a directed hair crab fishery was opened in the Northern District of king crab Registration Area Q and the Pribilof District was closed to commercial hair crab fishing due to low stock abundance. The 2000 Northern District hair crab fishery opened at noon on October 30 with

three vessels registered. All registration, landing, observer, and gear requirements were identical to those used to manage prior Pribilof District hair crab fisheries. The fleet harvested 1,546 pounds of hair crabs in a fishery that concluded on November 5, 2000. Catch rates were very low and averaged less than one legal crabs per pot lift. Most fishing occurred in the southeastern portion of the district and covered the areas where hair crabs were most frequently encountered on the NMFS trawl survey. Reports from fishers indicate that hair crabs were widely distributed in the Northern District, but were not encountered in aggregations large enough to produce commercially significant catches. Hair crabs caught in the Northern District averaged 1.5 pounds per legal crab and fishers were paid an average price of \$3.84 per pound giving the fishery a total value of just under \$6,000.

2001 Fishery

The 2001 Bering Sea hair crab fishery was closed in both the Northern District and Pribilof District due to low stock abundance.

Fishery Management and Status of Stocks

The Bering Sea hair crab fishery is managed inseason using data collected from observers, vessel operators and processors. Observers provide catch and effort reports that are expanded into harvest estimates and are the primary inseason management tool. Catch reports from processors are used to verify estimates generated from observer data. Reports from fishers provide information regarding distribution of crabs, gear conflicts, weather and other fishing conditions.

The abundance index for large male hair crabs declined from 1981 to 1992 and increased from 1992 to 1996. The 2001 NMFS trawl survey of the eastern Bering Sea indicated that the abundance of large male hair crab has decreased by 58% over the 2000 level to 1.8 million crabs. Total estimated female abundance increased from 1.3 million crabs to 2.1 (Rugolo et al. 2001). It is important to note however, that inferences made from female abundance data should be viewed with caution since the eastern Bering Sea trawl survey has never estimated the abundance of female and small male hair crabs with precision. In general, the biology and habitat usage of hair crabs makes them difficult to survey with trawl gear. Large male abundance is thought to be better estimated because recruitment trends can be followed in the survey results.

Bering Sea Octopus

The last directed fishery for octopus occurred in 1995, with areas fished covering both Aleutian Islands and Bering Sea waters. Less than three vessels made landings; therefore, the harvest information is confidential. Since 1995, all reported harvests in the Bering Sea have been incidental harvest. Octopus bycatch may be retained by any vessel registered for groundfish in the Westward Region using a miscellaneous finfish permit at up to 20% of the weight of the target species. During the 2000 season, 114 vessels registered for octopus incidental harvest in the Bering Sea/Aleutian Islands area. Fifty of these vessels made 128 landings with 16,303 pounds of octopus reported. Another 23,641 pounds was discarded at sea. During the 2001 season, 128 vessels registered for incidental octopus harvest.

Sixty-two of these vessels made 163 landings with 8,982 pounds of octopus. Another 41,965 pounds was discarded at sea (Table 5-36). Seventy-four percent (6,272 pounds) of the landed octopus was retained for bait, 16% was used for fish meal, 8% for octopus mantles, 1% for personal use, and less than 1% was discarded on shore. During the 2001 season, 48% of the octopus bycatch was caught with non-pelagic bottom trawl gear, and 47% was caught with pot gear. Currently, directed fishing for octopus is not permitted in the Bering Sea District.

Paralomis Multispina

Fishing for *P. multispina* is managed under the terms of a commissioner's permit. No vessels registered or fished for *P. multispina* in the Bering Sea District during the 1997 through 2001 seasons. One vessel, for which landings are confidential, participated in the 1996 fishery. Although one vessel was registered for *P. multispina* in 1995, no commercial harvest was reported.

Sea Cucumber and Sea Urchin

In September 2001, ADF&G issued a news release announcing the GHL for sea cucumbers and sea urchins in the Westward Region. The 2001 season was opened under a commissioner's permit with a GHL of 5,000 pounds each, eviscerated product for sea cucumbers and whole animal weight for sea urchins. The small GHLs were established to permit conservative commercial exploration of areas that lacked historic harvest data and to allow ADF&G to collect critical information for future management purposes (Ruccio and Jackson 2000). To date, there has not been any commercial harvest of either species in the Bering Sea District.

Snails

Historic Background

Commercial fishing for snails in the Bering Sea began with the Japanese in 1971 and continued until 1987, however little information is available from this early fishery. In 1977, the Japanese began providing records to the United States concerning fisheries occurring inside the U.S. Exclusive Economic Zone (EEZ), as mandated by the Fishery Conservation and Management Act of 1976 (MacIntosh 1979). The National Marine Fisheries Service (NMFS) recorded 14 vessels participating in 1971, five vessels in 1972, no vessels in 1973, and six vessels in 1974. There was no fishing activity in 1975 and 1976. In 1977, records indicate that participation in the fishery increased to three vessels (MacIntosh 1980). In the 1980s all fishing was conducted by catcher-processor vessels. The majority of the retained catch during this early fishery was composed of the Pribilof Neptune snail *Neptunea pribiloffensis*. Smaller components of the retained catch were composed of *Buccinum angulosum* and *B. scalariforme* (MacIntosh 1980). Exvessel value was \$242 thousand in 1977, increasing to \$1.3 million by 1979. Russian vessels began fishing for snails in the same area in 1989.

The Foreign Fisheries Observer Program assigned observers to Japanese catcher-processors in the years 1984-1987 and later to Russian vessels in 1989. The Russian venture only lasted one year with minimal return. Gear used during the early foreign fishery was converted Tanner crab pots. Pots were long-lined in depths from 100 to 150 fathoms. Data from the Foreign Fisheries Observer Program showed the Japanese vessels pulled an average of 2,779 pots per day with an average soak time of 50 hours while the Russian vessels averaged just 1,219 pot lifts per day with an average soak time of 80 hours.

The U.S. fishery began in 1992 when two vessels registered to fish for snails. One vessel harvested snails as incidental harvest in the Tanner crab *Chionoecetes bairdi* fishery and the second participated in a directed fishery for snails after the June closure of the hair crab *Erimacrus isenbeckii* fishery. Fishing for snails was limited to waters of the Bering Sea District west of 168° W long. from 1994 to 1996. In 1997, snail fishing was limited to waters west of 164° W long.

Observer coverage was required as a condition of the commissioner's permit issued in 1993 under 5 AAC 39.210 (h) MANAGEMENT PLAN FOR HIGH IMPACT EMERGING FISHERIES. Minimal crab bycatch was observed in the area west of 168° W long. Bycatch of legal sized blue king crab *Paralithodes platypus* and red king crab *Paralithodes camtschaticus* was less than one animal per pot. Female snow crabs *Chionoecetes opilio* had the highest incidence of bycatch at one animal per pot (Tracy 1995).

Observer coverage was not required again until 1997 when two vessel operators expressed interest in fishing east of 168° W longitude. Vessels were restricted to grounds west of 164° W long. and north of 54°36' N latitude. These restrictions were conditions of the permit issued under 5 AAC 38.062 PERMITS FOR OCTOPI, SQUID, HAIR CRAB, SEA URCHINS, SEA CUCUMBERS, SEA SNAILS, CORAL, AND OTHER MARINE INVERTEBRATES. There was no bycatch of red or blue king crabs; however, bycatch of Tanner crabs was observed. An estimated 17,300 female and 2,106 sublegal male Tanner crabs, in addition to 57,568 sublegal snow crabs, were captured in the 191,893 pots pulled.

In the 1997 fishery, average catch per unit of effort (CPUE, defined as retained catch per pot pull) was 16 snails per pot, equal to the CPUE from vessels fishing northwest of the Pribilof Islands in the 1996 fishery. The majority of the catch for the 1997 season was composed of the genera *Neptunea* and *Buccinum*. Catches increased from 312,876 pounds in 1993 to 3,572,992 pounds in 1996 and then declined to 932,048 pounds in 1997 (Table 5-37, Figure 5-15). The value of the fishery increased from \$125 thousand in 1993 to over \$1.05 million in 1996 and then dropped to \$308 thousand in 1997 (Table 5-38).

2001 Fishery

No vessels registered to harvest snails from the Bering Sea in 2001.

Stock Status

The NMFS eastern Bering Sea trawl survey provides distribution and relative abundance information on Bering Sea snail populations. However, differential catchability of various species of snails makes accurate population estimates difficult.

NORTH PENINSULA DISTRICT

Description of Area

The North Peninsula District for shrimp management includes all waters of the Bering Sea east of the longitude of Cape Sarichef at 164°55'30" W long. (Figure 5-16). The North Peninsula District for management of Dungeness crabs *Cancer magister* includes Bering Sea waters of Registration Area J north of the latitude of Cape Sarichef at 54°36' N lat. (Figure 5-17).

Shrimp

No vessels have registered for the North Peninsula District pot or trawl shrimp fishery since 1994. Currently, shrimp fishing is not permitted in this district due to a lack of data concerning the shrimp stocks.

Dungeness Crabs

Fishing effort for the North Peninsula Dungeness crab fishery has been sporadic, with few vessels participating. Most of this fishery occurred primarily north of Unimak Island. In 1995 six vessels made 19 deliveries for a harvest of 134,407 pounds. Catch information from 1996 to 1998 is confidential, as less than three vessels participated in those years. The average annual harvest in the three-year period from 1996-1998 was approximately 48,000 pounds. No vessels registered to fish for Dungeness crabs in the North Peninsula District in 1999. One vessel, for which landings are confidential, participated in the 2000 fishery. No vessels registered to fish for Dungeness crabs in 2001 (Table 5-39).

Stock Status

There is no population data available to determine the status of the North Peninsula Dungeness crab stock. This fishery is managed using size, sex and season restrictions. Currently in this District only male Dungeness crabs with a shoulder width 6-1/2" or larger may be taken between 12:00 noon May 1 through 12:00 noon October 18.

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BERING SEA/ALEUTIAN ISLANDS COMMUNITY DEVELOPMENT QUOTA CRAB FISHERIES, 2001

Description of Area

The Bering Sea, for Community Development Quota (CDQ) fisheries, encompasses all waters north of Cape Sarichef (54°36' N lat.), south of Cape Prince of Wales (65°49' N lat.), and east of the U.S.-Russia Convention Line of 1867, including the waters of Bristol Bay. For those CDQ fisheries managed by the Westward Region of the Alaska Department of Fish and Game (ADF&G), Cape Romanzof (61°49' N lat.) is the northern boundary (Figure 5-18).

CDQ Program Background

The North Pacific Fishery Management Council (NPFMC) established the CDQ Program in 1992. In 1995 the Council included Bering Sea crab in the CDQ Program. The Alaska Board of Fisheries (BOF) adopted regulations for the Bering Sea/Aleutian Islands king and Tanner crab CDQ fisheries in 1997, and those fisheries started in 1998. The State of Alaska Department of Community and Economic Development manages the CDQ Program and ADF&G manages the CDQ crab fisheries.

There are 65 coastal Bering Sea communities eligible for the CDQ Program. These communities are aligned into six CDQ organizations and are collectively referred to as CDQ groups. The groups are Aleutian Pribilof Island Community Development Association (APICDA), Bristol Bay Economic Development Corporation (BBEDC), Central Bering Sea Fishermen's Association (CBSFA), Coastal

Villages Regional Fund (CVRF), Norton Sound Economic Development Corporation (NSEDC), and Yukon Delta Fisheries Development Association (YDFDA).

The CDQ groups are non-profit entities, which may have for-profit subsidiaries. Each group submits comprehensive plans on the intended use of the CDQ funds. These uses vary widely between groups, but most are fishing-related investments, scholarships, training, employment services, and other projects which are intended to benefit the communities and regions the CDQ groups represent. The groups are buying equity in fishing vessels which will harvest crab in both CDQ and general fisheries.

The CDQ groups receive allocations for the following Bering Sea crab fisheries: Norton Sound red king crab *Paralithodes camtschatica*, Bristol Bay red king crab, Pribilof red and blue king crab *P. platypus*, St. Matthew blue king crab, Bering Sea snow crab *Chionoecetes opilio*, and Bering Sea Tanner crab *C. bairdi*. To be eligible as CDQ crab fisheries, the fisheries must have an established guideline harvest level (GHL) and managed under the Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner Crabs (FMP). The CDQ allocation is based on the total harvest of each Bering Sea crab species. The annual CDQ percentages for crab were phased in over a three-year period (3.5% of the total fishery harvest for 1998, 5.0% for 1999, and reaching a maximum of 7.5% for 2000 and subsequent years). The individual CDQ group allocation percentage varies in each fishery (Table 5-40). The value of the above fisheries to the CDQ groups is estimated to be 20 to 30% of the exvessel fishery value to the fleet. This report addresses all of the above fisheries except the Norton Sound red king crab fishery.

The CDQ groups are required to submit fishery plans to the department prior to each fishery. Plans include names of participating vessels and operators, vessel information regarding safety and communications, intended processor and location, method of attaining but not exceeding the allocation, and if a cooperative effort, the method for apportioning deadloss and overages.

All CDQ crab fisheries have occurred subsequent to the general fisheries, and all CDQ vessels participated in the prior general fishery. Before vessels are allowed to register for the CDQ fishery, all the crabs harvested in the general fishery are offloaded. Fishers are required to obtain buoy tags for all gear fished, and if required, an onboard observer. At the time of registration all gear on board the vessel must be tagged with CDQ pot tags; all gear in the water must be tagged before being deployed in the fishery. Additionally, all gear needs to be in compliance with the closure requirements of the general fishery.

1998

The allocation for 1998 was 3.5% of the total harvest of red king crab, blue king crab and snow crab. All six CDQ groups participated in those fisheries during the year; however, not all groups participated in each fishery. No Tanner crab fishery occurred due to low stock abundance.

Twenty vessels made 86 deliveries for a total harvest of 8.85 million pounds in the CDQ snow crab fishery (Table 5-41). The fishery value was \$4.7 million (Table 5-42). All six CDQ groups participated in the CDQ snow crab fishery. One group exceeded their allocation by a small amount. This group,

however, paid another CDQ group not to harvest their total allocation, and thereby insured that the overall CDQ allocation was not exceeded.

Five CDQ groups participated in the St. Matthew Island Section CDQ blue king crab fishery and two vessels harvested the allocation, thus catch information is confidential. One vessel and group participated in the Pribilof District king crab CDQ fishery, thus harvest in that fishery is also confidential.

Five CDQ groups participated in the Bristol Bay CDQ red king crab fishery. Although fish tickets indicated that product was delivered to three companies, the information is confidential because one company custom processed for another.

Onboard observers were required during all fishing operations. Observers documented fishing practices and collected biological data during periods outside of the normal fishery seasons. Additionally, the onboard observers provided data in fisheries where at-sea sampling has been minimal. Data obtained from observers deployed during CDQ king crab fisheries indicated no appreciable difference in fishing strategy as compared to the general fishery, while the same may not be true for the snow crab fishery. The industry-preferred minimum size is 4.0 inches for snow crab. A high discard rate of crabs over 4.0 inches was observed during the CDQ snow crab fishery, which indicated a possible change in fishing strategy.

Regulations pertaining to the CDQ fisheries authorize a harvest prior to the general fishery; however, the department did not allow a CDQ harvest before the general fishery during the first year. A full understanding of the impact of these new fisheries and adequate staff to handle the increased management burden was needed before allowing CDQ fisheries to occur prior to the general fisheries. The intent was to allow CDQ groups to harvest part of their allocation before the general fishery during the second and subsequent years of the program. This would have allowed CDQ groups to harvest part of their 1999 allocation of snow crab in the fall of 1998. The National Marine Fisheries Service (NMFS) determined that their CDQ crab regulation did not allow for a harvest of the allocation outside of the calendar year to which it was assigned. The intent of NMFS was not to impede ADF&G management of the CDQ crab fisheries. The federal CDQ regulations were revised, but not in time for any harvest of the 1999 allocation of snow crab to occur in the fall of 1998.

1999

BOF agreed to address an agenda change request at the March 1999 meeting to consider a proposal to prohibit any CDQ harvest prior to the general fishery. Representatives of processors and non-CDQ fishers contended that CDQ crab on the market prior to the general fishery would be detrimental to the value of the general fishery. The board directed the CDQ, non-CDQ and processor representatives to reach a compromise. The new regulation allows a CDQ king or Tanner crab fishery prior to the general fishery only when the GHL is 50 million pounds or more, and a maximum of 30% of the CDQ allocation may be harvested.

The CDQ allocation for 1999 was 5.0% of the total harvest of Bering Sea king and Tanner crab. Six CDQ groups participated in the Bering Sea snow crab fishery; 23 vessels made 104 deliveries for a

total harvest of 9.63 million pounds. The observer coverage was reduced in the CDQ snow crab fishery from one observer per vessel to one per CDQ group. This level of coverage, based on the number of vessels in the 1998 fishery, was considered adequate to obtain biological sampling goals set forth by the department. An objective for the observer to make at least one trip on each vessel during the fishery was not met. An increase in the number of participating vessels, erroneous start dates and non-cooperation on the part of some vessel operators resulted in 13% of the fleet without an observed trip. Two vessels transferred their observer while at sea, in direct violation of their permit conditions. The observer was involved with the decision to make the transfer; therefore, no legal action was taken against the vessel operators. One group slightly exceeded their allocation.

The department changed permitting procedures after the allocation was exceeded in the snow crab fishery for two consecutive years. Permits for CDQ fisheries were previously issued only to vessels fishing for the groups. These permits were issued before the actual allocation was established, and therefore did not reference the CDQ group's harvest allocation. Permits were henceforth to be issued to each CDQ group, initially stating the group allocation percentage and followed by an addendum with the actual allocation in pounds. The vessels were to be issued a permit that referred to the group permit and the associated allocation.

Five CDQ groups participated in the Bristol Bay CDQ red king crab fishery. Although fish tickets indicated that product was delivered to three companies, the information is confidential because one company custom processed for another. Observer coverage remained at one observer per vessel. The goal for observer coverage was to attain one sampling trip on each vessel during the short king crab fishery.

Data obtained from observers deployed during CDQ king crab fisheries indicated no noteworthy difference in fishing strategy as compared to the general fishery. The high discard rate of crabs over four inches observed during the 1998 CDQ snow crab fishery was also observed during the 1999 fishery. Data collected by observers and dockside samplers in the general fishery and by observers during the 1999 CDQ fishery showed no substantial difference in average carapace width of harvested snow crab. Fish ticket data show no appreciable difference in average weight. Observer debriefings and analysis of logbook data from unobserved effort show that the discard of four-inch and larger crab in the CDQ fishery is primarily due to the high occurrence of epibionts. This fishery follows the general fishery; thus fewer marketable crabs are available for harvest.

2000

The CDQ allocation for 2000 was 7.5% of the total harvest of Bristol Bay red king crab and Bering Sea snow crab. The CDQ groups continued to submit fishery plans to the department prior to each fishery. All CDQ fishing activity occurred subsequent to the general fishery. All CDQ vessels participated in the general fishery, and all permit and registration requirements previously stated were still in effect.

Although fish tickets indicated that product was delivered to three companies, the harvest information is confidential because one company custom processed for another for both the Bristol Bay red king crab and Bering Sea snow crab CDQ fisheries.

In 2000 the observer coverage was increased in the CDQ snow crab fishery from one observer per group to two per group. This level of coverage was necessary to obtain better bycatch data. Observer coverage remained at one observer per vessel for the Bristol Bay red king crab fishery. Observers continued to collect biological data and documented fishing practices of the CDQ fleet.

2001

Bering Sea CDQ Snow Crab Fishery

The allocation for the 2001 Bering Sea snow crab fishery was 1,878,070 pounds. All six CDQ groups participated in the fishery; the percent allocated to each group varied from 10 to 19 percent. Eleven vessels participated in the fishery. The first vessel registered on February 18, seven more registered by February 20; and the last vessel registered on February 26. The first vessel to start gear retrieval did so on February 22, and the last delivery occurred on March 29.

Although fish tickets indicated that product was delivered to three companies, the harvest information is confidential because one company custom processed for another. No floater-processors operated during the CDQ fishery. Catch per pot pull or retained legal crabs (CPUE) varied from 31 to 158 crabs and averaged 98 crabs. CPUE in the general fishery was estimated to be 85 crabs. The higher CPUE in the CDQ fishery may be attributed to longer soak times. Average soak time, from onboard observer data, was 48 hours in the CDQ fishery compared to 45 hours in the general fishery. Average weight of crabs in the CDQ fishery was 1.3 pounds, which compares to 1.4 pounds observed in the general fishery. One group exceeded their allocation.

Fishing effort in 2001 occurred west and northwest of the Pribilof Islands. In previous CDQ fisheries, areas fished included the areas north, south, east and southeast of the Pribilof Islands.

Observer coverage in the 2001 fishery was two for each group, the same as in the 2000 fishery. This compares to one observer per group in 1999 and to one observer per vessel in 1998.

Saint Matthew Island Section CDQ blue king crab fishery

No CDQ harvest of St. Matthew Section blue king crab occurred in 2001 due to low stock abundance.

Pribilof District CDQ red and blue king crab fishery

No CDQ harvest of Pribilof District red or blue king crab occurred in 2001 due to low stock abundance.

Bristol Bay CDQ red king crab fishery

The 2001 Bristol Bay CDQ red king crab fishery allocation based on inseason processor reports and hailed weights from the general fishery, was 617,623 pounds. All six CDQ groups participated in this fishery. Although fish tickets indicated that product was delivered to three companies, the harvest information is confidential because one company custom processed for another.

Permits were issued to each CDQ group prior to the closure of the general fishery on October 18. The permit stated the group's preliminary allocation which is determined by a percentage set forth for each CDQ group by the Alaska Department of Community and Economic Development. The permit listed the vessel(s) requested by the group and authorized by the department to participate in the fishery, and stated that those vessels must comply with requirements such as dates of operation, pot limits, buoy tags, and observer coverage. Vessel registration and permitting could begin midnight October 21, 72 hours after the closure of the general fishery. The 72-hours allows the department sufficient time to obtain harvest estimates from the general fishery and announce the final allocation for each CDQ group. Seven vessels registered on October 22, and the remaining three registered October 23. An addendum to each group permit was issued on October 25 specifying the final allocation. Deliveries began October 27, and the final delivery was made November 6. All CDQ groups met or were under their allocations.

Daily harvest ranged from just over 1,200 pounds to over 125,000 pounds. Average weight of crabs in the 2001 CDQ fishery was 6.8 pounds, compared to an average weight of 6.5 pounds for the general fishery. The average number of legal male crab per pot pull (CPUE) was 29, higher than the CPUE of 19 for the general fishery. Average soak time for the CDQ fishery was 37 hours, compared to an average soak of 23 hours during the general fishery. Two of the groups used three vessels to harvest their allocation and the remaining four groups used one vessel each.

During the 2001 CDQ Bristol Bay red king crab fishery, only one observer was required per group. In previous years, all CDQ vessels for this fishery were required to carry on board observers. With this year's level of coverage, four vessels were without an observer. During both fisheries, observers collected biological data, provided inseason harvest rates to the department, and documented fishing practices of the CDQ fleet.

Bering Sea CDQ Tanner crab fishery

No CDQ harvest of Tanner crab occurred during 2001 due to low stock abundance.

BERING SEA KING AND TANNER CRAB BUOY IDENTIFICATION PROGRAM

Introduction and Background

Early 1990s Bering Sea and Aleutian Islands (BSAI) crab fisheries were characterized by increased fishing effort, decreased guideline harvest levels (GHL), and shorter fishing seasons than prior years. In

response to these changes the BSAI crab industry submitted a petition regarding pot limits to the Alaska Board of Fisheries (BOF). The petition was supported by data from the Alaska Department of Fish and Game (ADF&G) indicating impaired conservation and management during low GHL fisheries because of the amount of gear fishing on the grounds. On March 20, 1991 the BOF proposed an agenda change request regarding this issue and subsequently adopted BSAI pot limit regulations. Effective August 1, 1992 these regulations limited the number of pots a vessel may operate while harvesting Bering Sea king *Paralithodes* and Tanner *Chionoecetes* crabs. The buoy identification program was created to help implement these regulations and as per Alaska State statute designed to be completely self-supportive by generating funds.

Buoy identification stickers were first implemented during 1992 Bristol Bay red king crab *Paralithodes camtschaticus* season, but were temporarily suspended due to product failure. Pot limit requirements for Bering Sea Tanner crab fisheries remained in effect until repealed by National Marine Fisheries Services on November 30, 1992. According to the Fishery Management Plan for Bering Sea /Aleutian Island King and Tanner Crab, pot limit regulation is a category II measure (NPFMC 1998). Category II measures may be adopted at the state level but are subject to the federal appeal process and must adhere to national standards requiring regulation application to be nondiscriminatory. Consequently, in February 1993 BOF passed differential pot limit regulations. Each fishery has specific pot limits based on vessel length overall (LOA) (Table 5-43). Vessels in excess of 125 feet LOA are entitled to operate the maximum number of pots allowed for a fishery, and vessels 125 feet or less in LOA may fish 80% of the maximum pot limit. Further differential pot limit regulations for the Bristol Bay red king crab fishery were adopted on an interim basis August 27, 1997. The regulations created an 11-tiered pot limit system dependent on fishery GHL and vessel pre-registration. The tiered system was made permanent March 1999.

Implementation

Beginning with 1992-1993 Bristol Bay king and Bering Sea Tanner crab seasons, ADF&G leased additional office space and employed a Fish and Wildlife Technician III to administer the buoy identification program. Regulations providing implementation of the buoy identification program are stated in Alaska Statute 16.05.050. POWERS AND DUTIES OF THE COMMISSIONER and Alaska Statute 16.05.632. IDENTIFICATION OF SHELLFISH POTS OR BUOYS, OR BOTH, USED IN THE TAKING OF KING CRAB AND REQUIREMENTS FOR BUOYS.

By May 1993 heavy-duty, self-locking, nylon, zip-tie tags had taken the place of buoy stickers. After use in several fisheries, numerous quality control problems and industry complaints prompted ADF&G to initiate trial tests of other manufactured tags. Eventually, a new style buoy tag was procured which required an independent means of attachment. The Alaska Department of Fish and Game initially supplied zip ties for tag attachment at no additional charge, but dispersal was discontinued due to high failure rates of zip ties. As a result, industry is now responsible for tag attachment. The new tags were first issued in September 1998 and continue to be used.

Replacement Tags

Buoy tag replacement issues were resolved during the initial BOF meeting regarding pot limits. Regulations were written based on concerns from the Division of Fish and Wildlife Protection regarding prosecution of cases involving replacement tags. Specifics regarding replacement tag sales are included in 5 AAC 34.826. (b) KING CRAB POT MARKING REQUIREMENTS FOR REGISTRATION AREA T, 5 AAC 34.926. (b) KING CRAB POT MARKING REQUIREMENTS FOR REGISTRATION AREA Q, and 5 AAC 35.536. (b) TANNER CRAB POT MARKING REQUIREMENTS FOR REGISTRATION AREA J.

Between the 1994 Bristol Bay red king crab and Bering Sea Tanner crab fisheries, and prior to 1995 snow crab season, the Dutch Harbor ADF&G office received input from fishers concerned with tag replacement regulations. At the time, vessels delivering to remote areas such as King Cove or St. Paul were unable to obtain replacement tags without travel to Dutch Harbor. Some vessel operators felt the cost of travelling to Dutch Harbor with three crewmembers was prohibitive to obtaining replacement tags and would promote illegal fishing.

During 1998-1999 seasons, stakeholders reiterated buoy tag replacement issues. In response to these concerns ADF&G began allowing permit holders to file an official affidavit in St. Paul or King Cove. However, ADF&G personnel must be available for verification. This change was implemented prior to 2000 Bering Sea snow crab fishery.

Buoy Identification Tag Refunds

Since the inception of the tag program, refunds for buoy tags have not been offered because the \$2.00 fee per tag covers administrative and program implementation costs. However, during the 2001 Bering Sea snow crab fishery, two buoy tag refunds were issued as per 15 AAC 116.120. REFUND OF LICENSE FEES.

Requests for buoy identification tag refunds may be procured only through ADF&G Headquarters in Juneau. To request a refund, the following information must be sent by the tag administrator to administrative staff in Kodiak: name, address, and social security number of the permit holder; vessel name and ADF&G number; a copy of the check used for original payment; number of tags purchased/returned; the imprinted sequential tag numbers; return date of unused, complete set of tags and person who received the tags; budget code for refunding; and a statement from the permit holder explaining the refund request. All refund requests are out of the tag program administrator's jurisdiction and will be evaluated by ADF&G Headquarters in Juneau.

Vessel Length Verification

The multi-tiered pot limit regulations are based in part on vessel length overall (LOA). These measurements are outlined in 5 AAC 34.825 (j) LAWFUL GEAR FOR REGISTRATION AREA T and 5 AAC

35.525 (f) **LAWFUL GEAR FOR REGISTRATION AREA J.** In order to obtain the maximum number of buoy tags allotted per fishery all vessels with LOA in excess of 125 feet must present valid, original or notarized, U.S. Coast Guard or certified marine surveyor documentation, showing the vessel's LOA. The permit holder is required to show LOA documentation the first time buoy tags are purchased, and when any change in vessel LOA occurs. The ADF&G office in Dutch Harbor has an established list of 98 vessels with documented LOA in excess of 125 feet.

Administration of the Buoy Identification Program

Bering Sea buoy tags are issued from the ADF&G offices in Kodiak and Dutch Harbor for an administrative fee of \$2.00 per tag. Tags are issued to the holder of a valid, fishery specific, Commercial Fisheries Entry Commission interim use permit card. An authorized agent may be issued tags if an affidavit is signed by the permit holder and filed with ADF&G. Also upon request, ADF&G Dutch Harbor office will send buoy tags through the U.S. Mail, via priority mail with insurance and return receipt. Due to potential weather-delayed mail service the deadline for mail request is generally two weeks prior to the opening of each fishery.

2001 - 2002 Buoy Tag Sales

Several of the Bering Sea crab fisheries were not prosecuted because of low stock levels. The Pribilof Island red king and blue king crab *Paralithodes platypus*, St. Matthew Island blue king crab, and Bering Sea Tanner crab *Chionoecetes bairdi* fisheries were closed in 2001. Tags for these fisheries are stored in Dutch Harbor ready for issue when needed (Table 5-44).

Six vessels purchased tags for 2001 Pribilof District golden king crab *Lithodes aequispinus* fishery, 240 tags were sold and 9 replacements issued, for a total of 249 tags. One vessel purchased tags for 2001 Northern District, St. Matthew Island Section golden king crab fishery; 60 tags were sold. No replacement tags were issued.

The department purchased 65,000 tags for 2001 Bristol Bay red king crab fishery. Tag sales for this fishery are as follows: from Dutch Harbor 184 vessels purchased 19,755 tags (31 were mail requests), in Kodiak 48 vessels purchased 4,921 tags, and due to unusual circumstances, one vessel purchased 100 tags from an ADF&G representative in King Cove. A total of 233 vessels purchased 24,776 tags and 4 replacement tags were issued for a grand total of 24,780 tags. Ten vessels purchased tags for 2001 Bristol Bay red king crab Community Development Quota (CDQ) fishery; 1,159 tags were sold. No replacement tags were issued.

The department purchased 62,500 tags for 2002 Bering Sea snow crab fishery. Tag sales for this fishery are as follow: from Dutch Harbor 147 vessels purchased 29,639 tags (25 were mail requests) and in Kodiak 45 vessels purchased 8,394 tags. A total of 192 vessels purchased 38,033 tags and 36 replacement tags were issued for a grand total of 38,069 tags. Ten vessels purchased tags for 2002 Bering Sea snow crab CDQ fishery, 1,985 tags were sold. No replacement tags were issued.

Literature Cited

NPFMC. 1998. Fisheries Management Plan for the King and Tanner Crab Fisheries of the Bering Sea and Aleutian Islands.

Table 5-1. Bristol Bay commercial red king crab harvest data, 1966-2001.

Year	Number of			Harvest ^a (pounds)	Number of Pots		CPUE ^b	Deadloss (pounds)
	Vessels	Landings	Crabs ^a		Registered	Pulled		
1966	9	15	140,554	997,321		2,720	52	
1967	20	61	397,307	3,102,443		10,621	37	
1968	59	261	1,278,592	8,686,546		47,496	27	
1969	65	377	1,749,022	10,403,283		98,426	18	
1970	51	309	1,682,591	8,559,178		96,658	17	
1971	52	394	2,404,681	12,955,776		118,522	20	
1972	64	611	3,994,356	21,744,924		205,045	19	
1973	67	441	4,825,963	26,913,636		194,095	25	N/A
1974	104	605	7,710,317	42,266,274		212,915	36	N/A
1975	102	592	8,745,294	51,326,259		205,096	43	1,639,483
1976	141	984	10,603,367	63,919,728		321,010	33	875,327
1977	130	1,020	11,733,101	69,967,868		451,273	26	730,279
1978	162	926	14,745,709	87,618,320		406,165	36	1,273,037
1979	236	889	16,808,605	107,828,057		315,226	53	3,555,891
1980	236	1,251	20,845,350	129,948,463	78,352	567,292	37	1,858,668
1981	177	1,026	5,307,947	33,591,368	75,756	542,250	10	711,289
1982	90	255	541,006	3,001,210	36,166	141,656	4	95,834
1983			NO COMMERCIAL FISHERY					
1984	89	137	794,040	4,182,406	21,762	112,556	7	35,601
1985	128	130	796,181	4,174,953	30,117	85,003	9	6,436
1986	159	230	2,099,576	11,393,934	32,468	178,370	12	284,127
1987	236	311	2,122,402	12,289,067	63,000	220,871	10	120,388
1988	200	201	1,236,131	7,387,795	50,099	153,004	8	23,537
1989	211	287	1,684,706	10,264,791	55,000	208,684	8	81,334

-Continued-

Table 5-1. (Page 2 of 2)

Year	Number of			Harvest ^a (pounds)	Number of Pots		CPUE ^b	Deadloss (pounds)
	Vessels	Landings	Crab ^a		Registered	Pulled		
1990	240	331	3,120,326	20,362,342	69,906	262,131	12	116,527
1991	302	324	2,630,446	17,177,894	89,068	227,555	12	119,670
1992	281	289	1,196,958	8,043,018	68,189	205,940	6	9,000
1993	292	361	2,261,287	14,628,639	58,881	253,794	9	133,442
1994			NO COMMERCIAL FISHERY					
1995			NO COMMERCIAL FISHERY					
1996	196	198	1,249,005	8,405,614	39,461	76,433	16	24,166
1997	256	265	1,315,969	8,756,490	27,499	90,510	15	13,771
1998	274	284	2,140,607	14,233,063	56,420	141,707	15	53,716
1999	257	268	1,812,403	11,090,930	42,403	146,997	12	44,132
2000	246	256	1,166,796	7,546,145	26,352	98,694	12	76,283
2001	230	238	1,196,040	7,786,420	24,571	63,242	19	57,294

^aGeneral fishery only. Deadloss included.

^bNumber of legal crabs per pot pull.

Table 5-2. Bristol Bay commercial red king crab economic performance data, 1980-2001.

Year	GHL ^a	Value		Season Length	
		Exvessel	Total ^b	Days	Dates
1980	70-120	\$0.90	\$115.3	40	09/10-10/20
1981	70-100	\$1.50	\$49.3	91	09/10-12/15
1982	10-20 ^c	\$3.05	\$8.9	30	09/10-10/10
1983		NO COMMERCIAL FISHERY			
1984	2.5- 6.0	\$2.60	\$10.8	15	10/01-10/16
1985	3.0-5.0	\$2.90	\$12.1	8	09/25-10/02
1986	6.0-13.0	\$4.05	\$45.0	13	09/25-10/07
1987	8.5-17.7	\$4.00	\$48.7	12	09/25-10/06
1988	7.5	\$5.10	\$37.6	8	09/25-10/02
1989	16.5	\$5.00	\$50.9	12	09/25-10/06
1990	17.1	\$5.00	\$101.2	12	11/01-11/13
1991	18	\$3.00	\$51.2	7	11/01-11-08
1992	10.3	\$5.00	\$40.2	7	11/01-11/08
1993	16.8	\$3.80	\$55.1	9	11/01-11/10
1994		NO COMMERCIAL FISHERY			
1995		NO COMMERCIAL FISHERY			
1996	5	\$4.01	\$33.6	4	11/01-11/05
1997	7	\$3.26	\$28.5	4	11/01-11/05
1998	15.8	\$2.64	\$37.4	5	11/01-11/06
1999	10.1	\$6.26	\$69.1	5	10/15-10/20
2000	7.7	\$4.81	\$36.0	4	^d 10/16-10/20
2001	6.6	\$4.81	\$37.5	3	10/15-10/18

^aGeneral fishery only. In millions of pounds.

^bMillions of dollars.

^cInseason revision to 4.7 million pounds.

^dDelayed start due to weather.

Table 5-3. Bristol Bay commercial red king crab catch and effort projections for non-AFA vessels, based on 12-hour telex reports.

October Date	Report Hour	Potlifts ^a	Catch ^{a,b} (lbs)	Cummulative Catch (lbs)	Number of Crabs ^a	Crabs/Potlift	# Vessels Reporting
16	12	1,899	132,700	132,700	20,415	11	51
16	24	12,402	1,077,406	1,210,106	165,755	13	52
17	36	7,869	840,054	2,050,160	129,239	16	49
17	48	7,297	666,439	2,716,599	102,529	14	50
18	60	10,177	1,349,601	4,066,200	207,631	20	51
18	72	18,237	2,779,412	6,845,612	427,602	23	26
19	84	9,599	943,402	7,789,014	145,139	15	16
Totals		67,480	7,789,014	7,789,014	1,198,310	16	

^aPer 12-hour period.

^bBased on 6.5 lb average weight reported by participating catcher processors during the fishery.

Table 5-4. Bristol Bay commercial red king crab catch and effort projections for AFA vessels, based on vessel reports.

October Date	Report Hour	Potlifts ^a	Catch ^{a,b} (lbs)	Cummulative Catch (lbs)	Number of Crabs ^a	Crabs/Potlift	% of Cap Harvested
16	6	415	24,226	24,226	3,727	9	3.34
16	12	759	42,816	67,041	6,587	9	9.25
17	18	541	33,365	100,406	5,133	9	13.85
17	24	221	26,137	126,542	4,021	10	17.46
17	30	16	1,580	128,122	243	10	17.68
17	36	583	71,942	200,064	11,068	12	27.6
18	42	729	112,171	312,234	17,257	15	43.07
18	48	568	96,525	408,759	14,850	16	56.39
18	54	1,043	169,930	578,689	26,143	18	79.83
Totals		4,875	578,692	578,689	89,029	12	79.83

^aPer 6-hour period.

^bBased on 6.5 lb average weight reported by participating catcher processors during the fishery.

Table 5-5. Bristol Bay commercial red king crab catch by statistical area, 2001.

Statistical Area	Number of		Pounds ^a	Pots Lifted	Average		Deadloss
	Landings	Crab ^a			CPUE	Weight	
615601	10	23,263	125,173	1,276	18	5.4	428
615630	47	152,036	1,005,482	9,523	16	6.6	11,662
615700	9	10,114	65,775	979	10	6.5	548
625600	46	172,798	1,117,574	7,502	23	6.5	7,360
625630	123	482,832	3,101,546	27,845	17	6.4	29,402
625700	14	18,016	118,670	1,366	13	6.6	1,009
635530	9	189,220	164,698	1,500	17	6.5	709
635600	36	180,583	1,214,910	7,025	26	6.7	2,785
635630	22	81,675	539,528	3,935	21	6.6	1,798
635700	4	7,990	52,475	328	24	6.6	235
645600	3	21,494	154,455	647	33	7.2	55
^b	10	19901	126159	1316	15	6.3	1,303
TOTALS	333	1,359,922	7,786,445	63,242	19	6.5	57,294

^aDeadloss included.

^bCombination of statistical areas in which fewer than three vessels made landings.

Table 5-6. Bristol Bay commercial red king crab harvest composition by fishing season, 1973-2001.

Season	Percent		Size Limit ^a	Average		% Old Shell
	Recruit	Postrecruit		Weight (pounds)	Length (mm)	
1973	63	37	6¼	5.6		
1974	60	40	6¼	5.5		
1975	21	79	6¼ ^b	5.7		
1976	56	44	6½	6.0	148	27.4
1977	67	33	6½	5.9	148	13.0
1978	75	25	6½	5.9	147	6.9
1979	47	53	6½	6.4	152	10.4
1980	44	56	6½	6.2	151	11.0
1981	14	86	6½ ^c	6.3	151	47.4
1982	68	32	6½	5.5	145	24.6
1983		NO COMMERCIAL FISHERY				
1984	59	41	6½	5.2	142	26.5
1985	66	34	6½	5.2	142	25.8
1986	65	35	6½	5.4	142	25.5
1987	77	23	6½	5.8	145	19.0
1988	59	41	6½	6.0	147	15.1
1989	58	42	6½	6.1	148	17.7
1990	49	51	6½	6.5	152	14.7
1991	44	56	6½	6.5	152	12.1
1992	33	67	6½	6.7	153	22.3
1993	33	67	6½	6.5	152	15.2
1994		NO COMMERCIAL FISHERY				
1995		NO COMMERCIAL FISHERY				
1996 ^d	31	69	6½	6.7	153	24.3
1997 ^d	28	72	6½	6.7	152	11.0
1998 ^d	40	60	6½	6.7	152	19.1 ^e
1999 ^d	72	28	6½	6.1	148	6.3
2000 ^d	65	35	6½	6.5	151	16.3
2001 ^d	54	46	6½	6.5	151	22.3

^aMinimum carapace width in inches.

^b6½ inches after 11/01.

^c7 inches after 10/20

^dLegal sized old and new shell greater than 153mm carapace length defined as postrecruits.

^eIncludes all skip molt crabs.

Table 5-7. Bristol Bay red king crab cost-recovery harvest data, 1990-2001.

Year ^a	Number of		Harvest ^b (pounds)	Number of Pots Pulled	Average		Deadloss (pounds)
	Landings	Crabs ^b			CPUE	Weight	
1990 ^b	3	9,567	80,701	870	16	5.9	24,540
1991 ^b	2	30,351	205,851	518	62	6.4	12,817
1992 ^b	1	11,213	74,089	670	17	6.3	3,000
1993 ^b	1	8,384	53,200	464	18	6.3	800
1994 ^b	1	14,806	93,336	732	21	6.0	4,500
1995 ^b	2	14,123	80,158	564	26	5.5	2,339
1996 ^b	3	15,390	107,955	355	44	6.9	1,918
1997 ^b	4	21,698	154,739	658	37	6.3	18,040
1998 ^b	2	22,230	188,176	738	36	7.0	32,564
1999 ^b	2	12,438	79,765	698	18	6.4	165
1999 ^c	2	16,930	106,179	541	31	6.3	245
2000 ^b	2	14,196	86,218	702	20	6.1	347
2001 ^b	1	4,333	30,286	145	30	7.0	36
2001 ^c	2	13,065	90,151	463	28	6.9	103

^aDeadloss not included.

^bConducted to fund Bering Sea crab research.

^cConducted to fund a portion of the Bering Sea and Aleutian Island king and Tanner observer deployment cost.

Table 5-8. Bristol Bay red king crab cost-recovery economic performance data, 1990-2001.

Year	Harvest ^a (pounds)	Value		Charter Dates	Days
		Exvessel (dollars)	Total (thousand)		
1990 ^b	56,161	\$5.10	286.4	08/7-09/7	30
1991 ^b	193,034	\$3.75	723.9	09/2-10/7	35
1992 ^b	71,089	\$5.24	372.5	10/8-10/23	15
1993 ^b	52,400	\$6.57	344.3	08/20-09/20	31
1994 ^b	88,836	\$5.21	462.8	09/25-10/25	30
1995 ^b	77,819	\$6.65	517.5	08/1-08/31	31
1996 ^b	106,037	\$4.53	480.4	08/1-08/31	31
1997 ^b	136,699	\$3.55	485.2	07/25-08/21	28
1998 ^b	155,612	\$3.25	505.7	08/1-08/28	28
1999 ^b	79,600	\$6.02	478.8	09/25-10/11	17
1999 ^c	105,934	\$6.32	669.5	10/25-11/10	17
2000 ^b	85,871	\$5.82	499.8	9/20-10/04	15
2001 ^b	30,250	\$5.35	161.8	9/22-10/11	18
2001 ^c	90,048	\$5.12	461.1	10/23-11/08	17

^aDeadloss not included.

^bConducted to fund Bering Sea crab research.

^cConducted to fund a portion of the Bering Sea and Aleutian Island king and Tanner observer deployment cost.

Table 5-9. Pribilof District commercial red and blue king crab catch statistics, 1973/74-2001.

Year ^a	Number of		Harvest ^b (pounds)	Number of Pots		CPUE ^c	Average		Deadloss (pounds)
	Vessels	Landings		Registered	Pulled		Weight (pounds)	Length ^d (mm)	
1973/74	8	13	174,420		6,814	26	7.3	N/A	0
1974/75	70	101	908,072		45,518	20	7.8	157.8	0
1975/76	20	54	314,931		16,297	19	7.7	159.1	0
1976/77	47	113	855,505		71,738	12	7.7	158.1	0
1977/78	34	104	807,092		106,983	8	7.9	158.9	159,269
1978/79	58	154	797,364		101,117	8	8.1	159.3	63,140
1979/80	46	115	815,557		83,527	10	7.7	155.9	284,555
1980/81	110	258	1,497,101	31,636	167,684	9	7.3	155.7	287,285
1981/82	99	312	1,202,499	25,408	176,168	7	7.6	158.2	250,699
1982/83	122	281	587,908	34,429	127,728	5	7.5	159.8	51,703
1983/84	126	221	276,364	36,439	86,428	3	7.9	159.9	4,562
1984/85	16	25	40,427	3,122	15,147	3	7.6	155.5	0
1985/86	26	49	77,607	6,038	23,483	3	6.9	146.5	7,500
1986/87	16	25	36,988	4,376	15,800	2	7.0	N/A	5,450
1987/88	38	68	95,131	9,594	40,507	2	7.4	152.7	9,910
1988/89				NO COMMERCIAL FISHERY					
1989/90				NO COMMERCIAL FISHERY					
1990/91				NO COMMERCIAL FISHERY					
1991/92 ^e				NO COMMERCIAL FISHERY					
1992/93				NO COMMERCIAL FISHERY					
1993 ^f	112	135	380,217	4,860	35,942	11	6.9	154.4	0
1994 ^f	104	121	167,520	4,675	28,976	6	8.0	162.1	2,929

-Continued-

Table 5-9. (Page 2 of 2)

Year ^a	Number of			Harvest ^b (pounds)	Number of Pots		Average			Deadloss (pounds)
	Vessels	Landings	Crabs ^b		Registered	Pulled	CPUE ^c	Weight (pounds)	Length ^d (mm)	
1995 ^f	117	151	107,521	871,173		33,531	3	8.1	162.5	15,316
1995 ^g	119	152	172,987	1,267,454		34,721	5	7.3	N/A	46,263
1995 ^h	127	162	280,508	2,138,627	5,400	37,643	8	NA		61,579
1996 ^f	66	90	25,383	200,304		29,425	<1	7.9	161.0	319
1996 ^g	66	92	127,676	937,032		30,607	4	7.3	153.1	14,997
1996 ^h	66	92	153,059	1,137,336	2,730	30,607	3	7.4		15,316
1997 ^f	53	110	90,641	756,818		28,458	3	8.4	164.3	18,807
1997 ^g	51	105	68,603	512,374		27,652	3	7.5	163.6	16,747
1997 ^h	53	110	159,244	1,269,192	2,230	30,400	5	8.0		35,554
1998 ^f	57	84	68,129	510,365		23,381	3	7.5	158.8	8,703
1998 ^g	57	83	68,513	516,996		22,965	3	7.5	156.1	22,289
1998 ^h	57	84	136,642	1,027,361	2,398	23,381	3	7.5		30,992
1999				NO COMMERCIAL FISHERY						
2000				NO COMMERCIAL FISHERY						
2001				NO COMMERCIAL FISHERY						

^aBlue king crab, 1973 - 1988.^bDeadloss included.^cDefined as catch of legal crabs per pot.^dCarapace length.^e10,869 pounds illegal red king crab harvested.^fRed king crab.^gBlue king crab.^hBlue and red king crab fisheries combined.

Table 5-10. Guideline harvest level (GHL), economic performance and season length summary of the commercial red and blue king crab fishery, in the Pribilof District, 1980/81-2001.

Year ^a	GHL ^b	Value		Season Length	
		Exvessel	Total ^c	Days	Dates
1980/81	5.0-8.0	\$0.90	\$9.6	60	09/15-11/15
1981/82	5.0-8.0	\$1.50	\$13.6	47	09/10-10/28
1982/83	5.0-8.0	\$3.05	\$13.4	15	09/10-09/25
1983/84	4.0 ^d	\$3.00	\$6.6	10	09/01-09/11
1984/85	0.5-1.0	\$2.50	\$0.1	15	09/01-09/16
1985/86	0.3-0.8	\$2.90	\$1.4	26	09/25-10/21
1986/87	0.3-0.8	\$4.05	\$1.2	55	09/25-11/20
1987/88	0.3-1.7	\$4.00	\$2.8	86	09/25-12/20
1988/89		NO COMMERCIAL FISHERY			
1989/90		NO COMMERCIAL FISHERY			
1990/91		NO COMMERCIAL FISHERY			
1991/92		NO COMMERCIAL FISHERY			
1992/93		NO COMMERCIAL FISHERY			
1993 ^e	3.4	\$4.98	\$13.0	6	09/15-09/21
1994 ^e	2.0 ^d	\$6.45	\$8.6	6	09/15-09/21
1995 ^e	2.5 ^g	\$3.37	\$2.9	7	09/15-09/22
1995 ^f	2.5 ^g	\$2.92	\$3.9	7	09/15-09/22
1996 ^e	1.8 ^g	\$2.76	\$0.6	11	09/15-09/26
1996 ^f	1.8 ^g	\$2.65	\$2.4	11	09/15-09/26
1997 ^e	1.5 ^g	\$3.09	\$2.3	14	09/15-09/29
1997 ^f	1.5 ^g	\$2.82	\$1.4	14	09/15-09/29
1998 ^e	1.25 ^{g,h}	\$2.39	\$1.2	13	09/15-09/28
1998 ^f	1.25 ^{g,h}	\$2.34	\$1.2	13	09/15-09/28
1999		NO COMMERCIAL FISHERY			
2000		NO COMMERCIAL FISHERY			
2001		NO COMMERCIAL FISHERY			

^aBlue king crab, 1980-1988.

^bGuideline harvest level, millions of pounds.

^cMillions of dollars.

^dSet not to exceed.

^eRed king crab.

^fBlue king crab.

^gCombined red and blue king crab.

^hGeneral fishery only.

Table 5-11. Commercial harvest of blue king crabs in the St. Matthew Island Section, 1977-2001.

Year	Number of			Harvest ^a (pounds)	Number of Pots		CPUE ^b	Percent Recruits	Average		Deadloss (pounds)
	Vessels	Landings	Crabs ^a		Registered	Pulled			Weight (pounds)	Length ^c (mm)	
1977	10	24	281,665	1,202,066		17,370	16	7	4.3	130.4	129,148
1978	22	70	436,126	1,984,251		43,754	10	N/A	4.5	132.2	116,037
1979	18	25	52,966	210,819		9,877	5	81	4.0	128.8	128.8
1980					CONFIDENTIAL						
1981	31	119	1,045,619	4,627,761		58,550	18	N/A	4.4	N/A	53,355
1982	96	269	1,935,886	8,844,789		165,618	12	20	4.6	135.1	142,973
1983	164	235	1,931,990	9,454,323	38,000	133,944	14	27	4.8	137.2	828,994
1984	90	169	841,017	3,764,592	14,800	73,320	11	34	4.5	135.5	31,983
1985	79	103	484,836	2,427,110	13,000	51,606	9	9	5.0	139	2,613
1986	38	43	219,548	1,003,162	5,600	22,093	10	10	4.6	134.3	32,560
1987	61	62	234,521	1,075,179	9,370	28,440	8	5	4.6	134.1	400
1988	46	46	302,053	1,325,185	7,780	10,160	30	65	4.4	133.3	22,358
1989	69	69	247,641	1,166,258	11,983	30,853	8	9	4.7	134.6	3,754
1990	31	38	391,405	1,725,349	6,000	26,264	15	4	4.4	134.3	17,416
1991	68	69	726,519	3,372,066	13,100	37,104	20	12	4.6	134.1	216,459
1992	174	179	544,956	2,474,080	17,400	56,630	10	9	4.6	134.1	0
1993	92	136	629,874	2,999,921	5,895	58,647	11	6	4.8	135.4	0
1994	87	133	827,015	3,764,262	5,685	60,860	14	60	4.6	133.3	46,699
1995	90	111	666,905	3,166,093	5,970	48,560	14	45	4.8	135	90,191
1996	122	189	661,115	3,080,916	8,010	91,205	7	47	4.7	134.6	36,892
1997	117	166	939,822	4,649,660	7,650	81,117	12	31	4.9	139.5	209,490
1998	131	255	612,346	2,868,965	8,561	89,500	7	46	4.7	135.8	14,417
1999					NO COMMERCIAL FISHERY						
2000					NO COMMERCIAL FISHERY						
2001					NO COMMERCIAL FISHERY						

^aDeadloss included.^bDefined as catch of legal crabs per pot pull.^cCarapace length.

Table 5-12. Guideline harvest level (GHL), economic performance and season length summary of the commercial blue king crab fishery in the St. Matthew Island Section, 1983-2001.

Year	GHL ^a	Value		Season Length	
		Exvessel	Total ^b	Days	Dates
1983	8	\$3.00	\$25.80	17	08/20-09/06
1984	2.0-4.0	\$1.75	\$6.50	7	09/01-09/08
1985	0.9-1.9	\$1.60	\$3.80	5	09/01-09/06
1986	0.2-0.5	\$3.20	\$3.20	5	09/01-09/06
1987	0.6-1.3	\$2.85	\$3.10	4	09/01-09/05
1988	0.7-1.5	\$3.10	\$4.00	4	09/01-09/05
1989	1.7	\$2.90	\$3.50	3 ^c	09/01-09/04
1990	1.9	\$3.35	\$5.70	6	09/01-09/07
1991	3.2	\$2.80	\$9.00	4	09/16-09/20
1992	3.1	\$3.00	\$7.40	3 ^c	09/04-09/07
1993	4.4	\$3.23	\$9.70	6	09/15-09/21
1994	3.0	\$4.00	\$15.00	7	09/15-09/22
1995	2.4	\$2.32	\$7.10	5	09/15-09/20
1996	4.3	\$2.20	\$6.70	8	09/15-09/23
1997	5.0	\$2.21	\$9.80	7	09/15-09/22
1998	4.0 ^d	\$1.87	\$5.34	11	09/15-09/26
1999		NO COMMERCIAL FISHERY			
2000		NO COMMERCIAL FISHERY			
2001		NO COMMERCIAL FISHERY			

^aGuideline harvest level, millions of pounds.

^bMillions of dollars.

^cActual length - 60 hours.

^dGeneral fishery GHL.

Table 5-13. Guideline harvest level (GHL), inseason harvest projections and actual commercial harvests for the St. Matthew Island Section blue king crab fishery, 1983-2001.

Year	Guideline Harvest Level ^a	Projected Harvest ^{a,b}	Actual Harvest ^{a,c}
1983	8.0	8.0	9.5
1984	2.0 - 4.0	4.0	3.8
1985	0.9 - 1.9	2.0	2.4
1986	0.2 - 0.5	1.0	1.0
1987	0.6 - 1.3	1.3	1.1
1988	0.7 - 1.5	1.5	1.3
1989	1.7	1.7	1.2
1990	1.9	1.9	1.7
1991	3.2	3.2	3.4
1992	3.1	3.1	2.5
1993	4.4	4.4	3.0
1994	3.0	3.0	3.8
1995	2.4	2.4	3.2
1996	4.3	4.3	3.1
1997	5.0	5.0	4.6
1998	4.0 ^d	2.9	2.9
1999	NO COMMERCIAL FISHERY		
2000	NO COMMERCIAL FISHERY		
2001	NO COMMERCIAL FISHERY		

^aMillions of pounds.

^bBased on inseason catch reports.

^cDeadloss included.

^dGeneral fishery only.

Table 5-14. Commercial harvest of blue king crabs by season for the St. Matthew Island Section, 1977-2001.

Season	Date		Harvest ^a	Minimum Size ^b	Price per Pound
	Opened	Closed			
1977	Jun-07	Aug. 16	1,202,066	5 1/2	\$1.00
1978	Jul-15	Sept. 3	1,984,251	5 1/2	\$0.95
1979	Jul-15	Aug. 24	210,819	5 1/2	\$0.70
1980	Jul-15	Sept. 3	219,777	5 1/2	\$0.75
1981	Jul-15	Aug. 21	4,627,761	5 1/2	\$0.90
1982	Aug-01	Aug. 16	8,844,789	5 1/2	\$2.00
1983 ^{cd}	Aug-20	Sept. 6 ^c	9,506,880 ^d	5 1/2	\$3.00
1984	Aug-01	Sept. 8	3,764,592	5 1/2	\$1.75
1985	Sep-01	Sept. 6	2,427,110	5 1/2	\$1.60
1986	Sep-01	Sept. 6	1,003,162	5 1/2	\$3.20
1987	Sep-01	Sept-05	1,075,179	5 1/2	\$2.85
1988	Sep-01	Sept-05	1,325,185	5 1/2	\$3.10
1989	Jan-01	Sept-04	1,166,258	5 1/2	\$2.90
1990	Sep-01	Sept-07	1,725,349	5 1/2	\$3.35
1991	Sep-16	Sept-20	3,372,066	5 1/2	\$2.80
1992	Sep-04	Sept-07	2,474,080	5 1/2	\$3.00
1993	Sep-15	Sept-21	2,999,921	5 1/2	\$3.23
1994	Sep-15	Sept-22	3,764,262	5 1/2	\$4.00
1995	Sep-15	Sept-22	3,166,093	5 1/2	\$2.32
1996	Sep-15	Sept-16	3,080,916	5 1/2	\$2.20
1997	Sep-15	Sept-22	4,649,660	5 1/2	\$2.21
1998	Sep-15	Sept-26	2,868,965	5 1/2	\$1.87
1999	NO COMMERCIAL FISHERY				
2000	NO COMMERCIAL FISHERY				
2001	NO COMMERCIAL FISHERY				

^aIn pounds, deadloss included.

^bCarapace width in inches.

^cPart of Northern District open until September 20.

^dSt. Lawrence Island harvest of 52,557 lbs. included.

Table 5-15. Pribilof District golden king crab fishery data, 1981/82-2001 seasons.

Season	Number of			Harvest ^{a,b}	Pots lifted	CPUE ^c	Average		Deadloss ^b
	Vessels	Landings	Crabs ^a				Weight ^b	Length ^d	
1981/82	2				CONFIDENTIAL				
1982/83	10	19	15,330	69,970	5,252	3	4.6	151	570
1983/84	50	115	253,162	856,475	26,035	10	3.4	127	20,041
1984					NO LANDINGS				
1985	1				CONFIDENTIAL				
1986	1				CONFIDENTIAL				
1987	1				CONFIDENTIAL				
1988	2				CONFIDENTIAL				
1989	2				CONFIDENTIAL				
1990					NO LANDINGS				
1991	1				CONFIDENTIAL				
1992	1				CONFIDENTIAL				
1993	5	15	17,643	67,458	15,395	1	3.8	NA	0
1994	3	5	21,477	88,985	1,845	12	4.1	NA	730
1995	7	22	82,456	341,700	9,481	9	4.1	NA	716
1996	6	32	91,947	329,009	9,952	9	3.6	NA	3,570
1997	7	23	43,305	179,249	4,673	9	4.1	NA	5,554
1998	3	9	9,205	35,722	1,530	6	3.9	NA	474
1999	3	9	44,098	177,108	2,995	15	4.0	NA	319
2000	7	19	29,145	127,217	5,450	5	4.4	NA	5,288
2001	6	14	33,723	145,876	4,262	8	4.3	NA	8,227

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dCarapace length in millimeters.

Table 5-16. Pribilof District golden king crab fishery economic performance data, 1991-2001 seasons.

Season	Value		Season Length	
	Exvessel ^a	Fishery	Days	Dates
1991	CONFIDENTIAL		365	1/1-12/31
1992	CONFIDENTIAL		365	1/1-12/31
1993	\$2.42	\$163,248	365	1/1-12/31
1994	\$3.81	\$336,252	365	1/1-12/31
1995	\$3.12	\$1,056,900	365	1/1-12/31
1996	\$2.02	\$639,532	365	1/1-12/31
1997	\$2.23	\$387,340	365	1/1-12/31
1998	\$2.06	\$72,611	365	1/1-12/31
1999	\$2.34	\$413,686	162	1/1-6/10
2000	\$3.22	\$392,436	365	1/1-12/31
2001	\$3.12	\$429,464	105	1/1-4/15

^aPrice per pound.

Table 5-17. Pribilof District golden king crab catch by statistical area, 2001.

Statistical area	Number of		Harvest ^{a,b}	Pots lifted	Average		
	Landings	Crab ^a			CPUE ^c	Weight ^b	Deadloss ^b
685600				CONFIDENTIAL			
695530				CONFIDENTIAL			
695600	12	23,689	105,876	3,396	7	4.5	4427
705530				CONFIDENTIAL			
705600	4	3,253	13,332	413	8	4.1	858
TOTALS	21	33,723	145,876	4,262	8	4	8,227

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

Table 5-18. Saint Matthew Island Section golden king crab fishery data,1982/83-2001 seasons.

Season	Number of			Harvest ^{a,b}	Pots lifted	CPUE ^c	Average		
	Vessels	Landings	Crabs ^a				Weight ^b	Length ^d	Deadloss ^b
1982/83	22	30	51,714	193,507	7,825	7	3.7	138	957
1983/84					NO LANDINGS				
1985					NO LANDINGS				
1986					NO LANDINGS				
1987	11	29	101,618	424,394	14,525	7	4.2	142	11,750
1988	11	23	36,270	160,441	11,672	3	4.4	150	14,000
1989	2				CONFIDENTIAL				
1990					NO LANDINGS				
1991					NO LANDINGS				
1992	1				CONFIDENTIAL				
1993					NO LANDINGS				
1994	1				CONFIDENTIAL				
1995	4	4	245	1,200	383	1	4.9	NA	0
1996	1				CONFIDENTIAL				
1997-2000					NO LANDINGS				
2001	1				CONFIDENTIAL				

^aDeadloss included.

^bIn pounds.

^cNumber of legal crabs per pot lift.

^dIn millimeters.

Table 5-19. Saint Matthew Island Section golden king crab fishery
economic performance data, 1991-2001 seasons.

Season	Value		Season dates
	Exvessel ^a	Total	
1991	NO LANDINGS		1/1-12/31
1992	CONFIDENTIAL		1/1-12/31
1993	NO LANDINGS		1/1-12/31
1994	CONFIDENTIAL		1/1-12/31
1995	\$3.12	\$3,744	1/1-12/31
1996	CONFIDENTIAL		1/1-12/31
1997-2000	NO LANDINGS		1/1-12/31
2001	CONFIDENTIAL		1/1-12/31

^aPrice per pound.

Table 5-20. Registration Area Q scarlet king crab fishery data, 1992-2001.

Year	Number of Vessels	Harvest ^{a,b}	Pots Lifted	Value		Average		Deadloss ^a
				Exvessel ^c	Fishery ^d	Weight ^a	CPUE ^e	
1992					NO LANDINGS			
1993					NO LANDINGS			
1994					NO LANDINGS			
1995	4	26,684	24,551	\$2.12	\$0.06	2.4	<1	465
1996	2				CONFIDENTIAL			
1997- 2001					NO LANDINGS			

^aIn pounds.

^bDeadloss included.

^cPrice per pound.

^dIn millions of dollars.

^eNumber of legal crabs per pot lift.

Table 5-21. Commercial harvest statistics, by season, for the Bering Sea District Tanner crab fishery, 1969-2001.

Year	Number of			Harvest ^a (pounds)	Number of Pots		CPUE ^b	Deadloss (pounds)
	Vessels	Landings	Crab ^a		Registered	Pulled		
1969	NA	131	353,300	1,008,900		29,800	12	NA
1970	NA	66	482,300	1,014,700		16,400	29	NA
1971	NA	22	61,300	166,100		7,300	8	NA
1972	NA	14	42,061	107,761		4,260	10	NA
1973	NA	44	93,595	231,668		15,730	6	NA
1974	NA	69	2,531,825	5,044,197		22,014	115	NA
1974/75	28	80	2,773,770	7,028,378		38,462	72	NA
1975/76	66	304	8,956,036	22,358,107		141,206	63	NA
1976/77	83	541	20,251,508	51,455,221		297,471	68	NA
1977/78	120	861	26,350,688	66,648,954		516,350	51	218,099
1978/79	144	817	16,726,518	42,547,174		402,697	42	76,000
1979/80	152	804	14,685,611	36,614,315	40,273	488,434	30	56,446
1981	165	761	11,845,958	29,630,492	42,910	559,626	21	101,594
1982	125	791	4,830,980	11,008,779	36,396	490,099	10	138,159
1983	108	448	2,286,756	5,273,881	15,255	282,006	8	60,029
1984	41	134	516,877	1,208,223	9,851	61,357	8	5,025
1985	44	166	1,283,474	3,151,498	15,325	104,707	12	14,096
1986				NO COMMERCIAL FISHERY				
1987				NO COMMERCIAL FISHERY				
1988	98	248	897,059	2,210,394	38,765	112,334	8	10,724
1989	109	359	2,907,021	7,012,965	43,607	184,892	16	34,664
1990	179	1,032	10,717,924	24,549,299	46,440	711,137	15	87,475
1990/91	255	1,756	16,608,625	40,081,555	75,356	883,391	19	210,769
1991/92	285	2,339	12,924,034	31,796,381	85,401	1,244,633	10	279,741

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Table 5-21. (Page 2 of 2)

Year	Number of			Harvest ^a (pounds)	Number of Pots		CPUE ^b	Deadloss (pounds)
	Vessels	Landings	Crab ^a		Registered	Pulled		
1992/93	294	2,084	15,265,880	35,130,866	71481	1,200,885	13	343,955
1993/94	296	862	7,235,498	16,891,320	116,039	576,464	13	258,389
1994	183	349	3,351,639	7,766,886	38,670	249,536	13	132,780
1995	196	256	1,877,303	4,233,061	40,827	247,853	8	44,508
1996 ^c	196	347	734,296	1,806,077	68,602	149,289	5	14,608
1997 to 2001	NO COMMERCIAL FISHERY							

^aDeadloss included.

^bDefined as catch of legal crab per pot.

^cIncludes incidental catch with Bristol Bay red king crab and Tanner crab directed fishery totals.

Table 5-22. Bering Sea District Tanner crab commercial catch by subdistrict, 1974/75-2001.

Season	Subdistrict	Number of			Harvest ^a (pounds)	Pots Pulled	Average		Deadloss (pounds)
		Vessels	Landings	Crab ^a			Weight (pounds)	CPUE ^b	
1974/75	Southeastern		72	2,526,687	6,504,984	32,275	2.6	78	0
	Pribilofs	28	8	247,083	523,394	3,923	2.1	63	0
	TOTAL		80	2,773,770	7,028,378	38,462	2.5	72	0
1975/76	Southeastern		230	6,682,232	16,643,194	106,445	2.5	63	0
	Pribilofs		74	2,273,804	5,714,913	34,761	2.5	65	0
	TOTAL	66	304	8,956,036	22,358,107	141,206	2.5	63	0
1976/77	Southeastern		437	16,089,057	41,007,736	233,667	2.6	69	0
	Pribilofs		104	4,162,451	10,447,485	63,804	2.5	65	0
	TOTAL	83	541	20,251,508	51,455,221	297,471	2.5	68	0
1977/78	Southeastern		706	21,055,527	53,278,012	408,437	2.5	52	0
	Pribilofs		155	5,210,170	13,152,843	107,913	2.5	48	0
	TOTAL	120	861	26,350,688	66,648,954	516,350	2.5	51	218,099
1978/79	Southeastern		758	15,601,891	39,694,205	356,594	2.5	44	75,400
	Pribilofs		59	1,124,627	2,852,969	46,103	2.5	24	600
	TOTAL	144	817	16,726,518	42,547,174	402,697	2.5	42	76,000
1979/80	Southeastern		789	14,329,889	35,724,003	476,410	2.5	30	56,446
	Pribilofs		15	355,722	890,312	12,024	2.5	30	0
	TOTAL	152	804	14,685,611	36,614,315	488,434	2.5	30	56,446
1981	Southeastern		674	10,532,007	26,684,956	496,751	2.5	21	97,398
	Pribilofs		87	1,313,951	2,945,536	62,875	2.5	21	4,196
	TOTAL	165	761	11,845,958	29,630,492	559,626	2.5	21	101,594

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Table 5-22. (page 2 of 3)

Season	Subdistrict	Number of			Harvest ^a (pounds)	Pots Pulled	Average		Deadloss (pounds)
		Vessels	Landings	Crab ^a			Weight (pounds)	CPUE ^b	
1982	Southeastern		539	3,825,433	8,812,302	322,634	2.3	12	69,829
	Pribilofs		252	1,005,547	2,196,477	167,465	2.2	6	68,330
	TOTAL	125	791	4,830,980	11,008,779	490,099	2.3	10	138,159
1983	Northern		10	29,478	48,454	5,950	1.7	5	167
	Southeastern		287	1,984,673	4,633,354	192,538	2.3	10	52,879
	Pribilofs		151	272,505	592,073	83,528	2.2	3	6,983
	TOTAL	108	448	2,286,756	5,273,881	282,006	2.3	8	60,029
1984	Southeastern		91	470,181	1,099,142	44,546	2.3	11	4,688
	Pribilofs		43	46,759	109,081	16,811	2.3	3	337
	TOTAL	41	134	516,877	1,208,223	61,357	2.3	8	5,025
1985	Southeastern	38	143	1,278,109	3,139,041	96,976	2.4	13	14,096
	Pribilofs	15	23	5,365	12,457	7,731	2.3	1	0
	TOTAL	44	166	1,283,474	31,513,498	104,707	2.4	12	14,096
1986			NO COMMERCIAL FISHERY						
1987			NO COMMERCIAL FISHERY						
1988	Eastern	98	248	897,059	2,210,394	112,334	2.5	8	10,724
	Western	0	0	0	0	0	0	0	0
	TOTAL	98	248	897,059	2,210,394	112,334	2.5	8	10,724
1990	Eastern		1,105	10,708,996	24,529,165	701,924	2.3	15	87,475
	Western		17	8,928	20,134	9,213	2.3	1	0
	TOTAL	179	1,032	10,717,924	24,549,299	711,137	2.3	15	87,475

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Table 5-22. (page 3 of 3)

Season	Subdistrict	Number of			Harvest ^a (pounds)	Pots Pulled	Average		Deadloss (pounds)
		Vessels	Landings	Crab ^a			Weight (pounds)	CPUE ^b	
1990/91	Eastern	255	1,756	16,608,625	40,081,555	883,391	2.4	19	210,769
	Western	0	0	0	0	0	0	0	0
	TOTAL	255	1,756	16,608,625	40,081,555	883,391	2.4	19	210,769
1991/92	Eastern	285	2,339	12,924,034	31,796,381	1,244,633	2.5	10	279,741
1992/93	Eastern	293	2,011	15,074,084	34,821,043	1,150,834	2.3	13	340,955
	Western	70	96	191,796	309,823	50,051	1.6	4	3,000
	TOTAL	294	2,084	15,265,880	35,130,866	1,200,885	2.3	13	343,955
1993/94	East of 168° ^c	283	347	1,696,430	4,114,949	250,501	2.4	7	103,715
	163° to 173° ^d	261	515	5,539,068	12,776,371	325,963	2.3	17	154,674
	TOTAL	296	862	7,235,498	16,891,320	576,464	2.3	13	258,389
1994	163° to 173°	183	349	3,351,639	7,766,886	249,536	2.3	13	132,780
1995	163° to 173°	196	256	1,877,303	4,233,061	247,853	2.3	8	44,508
1996	East of 168° ^c	192	195	393,257	994,776	75,753	2.5	5	8,464
	163° to 173° ^d	135	152	341,039	811,301	73,522	2.4	5	6,144
	TOTAL	196	347	734,296	1,806,077	149,275	2.5	5	14,608
1997 to 2001		NO COMMERCIAL FISHERY							

^aDeadloss included.^bDefined as catch of legal crabs per pot pull.^cIncidental harvest during Bristol Bay red king crab fishery.^dDirected Tanner crab fishery.

Table 5-23. Economic performance of the Bering Sea District Tanner crab commercial fishery, 1979/80-2001.

Year	GHL ^a	Value		Season Length	
		Exvessel (per lb.)	Total ^b	Days	Dates
1979/80	28-36	\$0.52	\$19.0	189	11/01-05/11
1981	28-36	\$0.58	\$17.2	88	01/15-04/15
1982	12-16	\$1.06	\$11.5	118	02/15-06/15
1983	5.6	\$1.20	\$6.2	118	02/15-06/15
1984	7.1	\$0.95	\$1.1	118	02/15-06/15
1985	3	\$1.40	\$4.3	149	01/15-06/15
1986		NO COMMERCIAL FISHERY			
1987		NO COMMERCIAL FISHERY			
1988	5.6	\$2.17	\$4.8	93	01/15-04/20
1989	13.5	\$2.90	\$20.3	110	01/15-05/07
1990	29.5	\$1.85	\$45.3	89	01/15-04/24
1990/91	42.8	\$1.12	\$44.5	126	11/20-03/25
1991/92	32.8	\$1.50	\$47.3	137	11/15-03/31
1992/93	39.2	\$1.69	\$58.8	137	11/15-03/31
1993 ^c	10.7	\$1.90	\$7.6	10	11/01-11/10
1993/94 ^d	9.1	\$1.90	\$24.0	42	11/20-01/01
1994 ^d	7.5	\$3.75	\$28.5	20	11/01-11/21
1995 ^d	5.5	\$2.80	\$11.7	15	11/01-11/16
1996 ^c	2.2	\$2.51	\$2.5	4	11/01-11/05
1996 ^d	6.2	\$2.48	\$2.0	12	11/15-11/27
1996	8.4	NA	\$4.5	16	NA
1997 to 2001		NO COMMERCIAL FISHERY			

^aGuideline harvest level, millions of pounds.

^bMillions of dollars.

^cEast of 168° West longitude (incidental to Bristol Bay red king crab).

^d163° -173° West longitude (directed fishery).

Table 5-24. Bering Sea District commercial Tanner crab harvest composition by fishing season, 1972-2001.

Season	Average		% New Shell
	Weight (pounds)	Width (mm)	
1972 ^a	2.6		
1973 ^a	2.5		
1974 ^a	2		
1974/75	2.5		
1975/76	2.5		
1976/77	2.5		
1977/78	2.5	152.8	88.0
1978/79	2.5	152.7	95.0
1979/80	2.5	151.4	90.0
1981	2.5	149.4	86.6
1982	2.3	148.8	85.4
1983 ^b	2.3	148.8	70.5
1984	2.3	146.5	40.0
1985	2.4	150.0	65.0
1986	NO COMMERCIAL FISHERY		
1987	NO COMMERCIAL FISHERY		
1988	2.5	143.5	70.2
1989	2.4	149.4	80.8
1990	2.3	148.1	96.5
1990/91	2.4	149.7	95.3
1991/92	2.5	150.4	93.2
1992/93	2.3	148.0	90.5
1993/94	2.4	150.7	93.9
1994	2.3	150.0	92.5
1995	2.3	149.3	58.6
1996 ^c	2.5	152.1	46.6
1997 to 2001	NO COMMERCIAL FISHERY		

^aIncidental to the king crab fishery.

^bPartial Bering Sea closure.

^cIncludes incidental catch with Bristol Bay red king crab and Tanner crab directed fishery totals.

Table 5-25. Bering Sea District commercial snow crab catch data, 1978/79-2001 seasons.

Year	GHL ^a	Number of			Harvest ^{b,c}	Pots Pulled	CPUE ^d	Deadloss ^c
		Vessels	Landings	Crab ^b				
1978/79		102	490	22,118,498	32,187,039	190,746	116	759,137
1979/80		134	597	25,286,777	39,572,668	255,102	99	228,345
1981	39.5-91.0	153	867	34,415,322	52,750,034	435,742	79	2,269,979
1982	16.0-22.0	122	803	24,089,562	29,355,374	469,091	51	1,092,655
1983 ^e	15.8	109	461	23,853,647	26,128,410	287,127	83	1,324,466
1984 ^e	49.0	52	367	24,009,935	26,813,074	173,591	138	798,795
1985 ^e	98.0	75	718	52,903,246	65,998,875	372,045	142	1,064,184
1986 ^e	57.0	88	992	76,499,123	97,984,539	543,744	141	1,378,533
1987 ^e	56.4	103	1,038	81,307,659	101,903,388	616,113	132	978,449
1988 ^e	110.7	171	1,285	105,716,337	135,354,637	776,907	136	3,260,020
1989 ^e	132.0	168	1,341	112,618,881	149,455,848	663,442	170	1,844,682
1990 ^e	139.8	189	1,565	128,977,638	161,821,350	911,613	141	1,796,664
1991 ^e	315.0	220	2,788	265,123,960	328,647,269	1,391,583	191	3,464,036
1992	333.0	250	2,763	227,376,582	315,302,034	1,281,796	177	2,325,852
1993	207.2	254	1,836	169,558,842	230,787,000	971,046	175	1,573,952
1994	105.8	273	1,293	114,779,014	149,775,765	716,524	160	1,799,323
1995	55.7	253	869	60,611,411	75,252,677	506,802	117	1,287,169
1996	50.7	234	766	52,912,823	65,712,797	520,651	102	1,333,014
1997	117.0	226	1,127	99,975,539	119,543,024	754,140	133	2,351,555
1998 ^f	225.9	229	1,767	186,543,734	243,341,381	891,268	207	2,893,945
1999 ^f	186.2	241	1,630	143,296,568	184,529,821	899,043	158	1,828,313
2000 ^f	26.4	229	287	23,265,802	30,774,838	170,064	137	338,057
2001 ^f	25.3	207	293	17,185,523	23,382,046	176,930	97	429,884

^aGuideline harvest level in millions of pounds.

^bDeadloss included.

^cIn pounds.

^dCatch of legal crabs per pot pull.

^ePartial district and subdistrict closures, see Table 5-24.

^fGeneral fishery only.

Table 5-26. Bering Sea District snow crab season dates and area closures, 1977/78-2001 seasons.

Season	Opened	Closed	Comments
1977/78	09/15/77	09/23/78	Bering Sea District closure ^a
1978/79	11/01/78	09/03/79	Bering Sea District closure ^a
1979/80	11/01/79	08/15/80 09/03/80	Bering Sea District state closure Bering Sea District federal closure
1981	01/15/81	09/01/81	Bering Sea District closure ^b
1982	02/15/82	08/01/82	Bering Sea District closure ^b
1983	02/15/83	05/22/83 08/01/83	Bering Sea District closure south of 57°30' N. lat. ^b Bering Sea District closure north of 57°30' N. lat. ^b
1984	02/15/84	08/01/84 08/22/84	Bering Sea District closure south of 58° N. lat. ^b Bering Sea District closure north of 58° N. lat. to allow an orderly start to king crab season ^b
	09/15/84	12/31/84	Bering Sea District closure north of 58°N. lat. reopened after king season and Bering Sea District closure ^b
1985	01/15/85	05/08/85 08/01/85 08/22/85	Pribilof Subdistrict closure south of 58° N. lat. ^b Bering Sea District closure south of 58°39' N. lat. ^b Northern Subdistrict closure to allow an orderly start to king crab season ^b
	10/09/85	01/15/86	* Bering Sea District reopened, except east of 164° W. long. in Southeastern Subdistrict, *fishery was scheduled to close 12/31/85 but did not, it remained open until the start of the 1986 fishery
1986	01/15/86	04/21/86 06/01/86 08/01/86 08/24/86	Southeastern Subdistrict closure west of 164° W long. ^b Pribilof Subdistrict closure ^b Northern Subdistrict closure east of 175° W. long. ^b Northern Subdistrict closure west of 175° W. long. ^b
1987	01/15/87	04/12/87 06/01/87	Southeastern Subdistrict west of 164° W. long., and Pribilof Subdistrict closure Northern Subdistrict south of 60°30' N lat. and east of 178° W. long. closure

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Table 5-26. (page 2 of 2).

Season	Opened	Closed	Comments
1987	01/15/87	06/22/87	Northern Subdistrict north of 60°30' N lat. and west of 178° W. long. closure
1988	01/15/88	03/29/88	Bering Sea District closure (Western Subdistrict to assist in an orderly closure)
	05/15/88	06/30/88	Western Subdistrict reopen and closure
1989	01/15/89	03/26/89 05/07/89	Eastern Subdistrict closure Western Subdistrict closure
1990	01/15/90	04/09/90 04/24/90 06/12/90	Eastern Subdistrict east of 165° W. long. closure Eastern Subdistrict west of 165° W. long. closure Western Subdistrict closure
1991	01/15/91	05/05/91 06/23/91	Eastern Subdistrict closure Western Subdistrict closure
1992	01/15/92	04/22/92	Bering Sea District closure
1993	01/15/93	03/15/93	Bering Sea District closure
1994	01/15/94	03/01/94	Bering Sea District closure
1995	01/15/95	02/17/95	Bering Sea District closure
1996	01/15/96	02/29/96	Bering Sea District closure
1997	01/15/97	03/21/97	Bering Sea District closure
1998	01/15/98	03/20/98	Bering Sea District closure
1999	01/15/99	03/22/99	Bering Sea District closure
2000	04/01/00	04/08/00	Bering Sea District closure
2001	01/15/01	02/14/01	Bering Sea District closure

^aState managed domestic fishery.^bConcurrent state and federal date.

Table 5-27. 2001 Bering Sea snow crab fishery inseason harvest and effort projections.

Date	Report Day	Projected				Cumulative harvest	Season CPUE
		Daily CPUE	Potlifts	Number of crabs	Daily Harvest		
(Jan) 17	1	101	406	41,157	57,620	57,620	101
18	2	169	435	73,468	102,855	160,475	136
19	3	138	563	77,514	108,520	268,994	137
20	4	137	697	95,789	134,104	403,098	137
21	5	147	736	108,101	151,341	554,439	140
22	6	164	638	104,401	146,162	700,601	144
23	7	126	702	88,687	124,162	824,763	141
24	8	164	717	117,666	164,732	989,494	144
25	9	170	736	125,454	175,636	1,165,131	148
26	10	171	869	148,883	208,437	1,373,567	151
27	11	201	587	118,196	165,474	1,539,042	155
28	12	154	443	68,422	95,790	1,634,832	155
29	13	162	529	85,698	119,977	1,754,809	156
30	14	123	772	94,753	132,654	1,887,463	153
31	15	125	522	65,137	91,192	1,978,655	151
(Feb) 1	16	80	595	47,837	66,971	2,045,626	147
2	17	72	593	42,698	59,777	2,105,404	143
3	18	104	685	71,342	99,879	2,205,283	140
4	19	53	1,044	55,130	77,182	2,282,465	133
5	20	80	9,882	790,460	1,106,645	3,389,110	109
6	21	84	21,575	1,814,974	2,540,963	5,930,073	97
7	22	93	20,032	1,865,297	2,611,415	8,541,488	96
8	23	93	11,149	1,031,617	1,444,263	9,985,751	95
9	24	86	6,748	582,535	815,549	10,801,300	94
10	25	93	19,188	1,776,947	2,487,726	13,289,026	94
11	26	82	15,386	1,265,191	1,771,267	15,060,293	93
12	27	86	22,447	1,935,061	2,709,085	17,769,378	92
13	28	80	7,157	570,903	799,264	18,568,642	91
14	29	73	26,415	1,932,089	2,704,925	21,273,567	88
15	30	58	20,250	1,179,650	1,651,509	22,925,076	85
Totals			192,499	16,375,054	22,925,076		85

Table 5-28. Bering Sea District commercial snow crab harvest by season and subdistrict, 1977/78-2001 seasons.

Season	Subdistrict	Number of			Harvest ^{a,b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings	Crab ^a					
1977/78	Southeastern		33	1,063,872	1,439,959	11,560	1.4	92	
	Pribilof		5	203,674	276,165	1,687	1.4	121	
	TOTAL	15	38	1,267,546	1,716,124	13,247	1.4	96	
1978/79	Southeastern	101	476	21,279,794	31,102,832	184,491	1.5	115	659,137
	Pribilof	10	14	838,704	1,084,039	6,225	1.5	135	100,000
	TOTAL	102	490	22,118,498	32,187,039	190,746	1.5	116	759,137
1979/80	Southeastern	133	561	23,199,446	36,406,391	237,375	1.6	98	187,945
	Pribilof	19	36	2,087,331	3,166,777	17,727	1.5	118	40,400
	TOTAL	134	597	25,286,777	39,572,668	255,102	1.6	99	228,345
1981	Southeastern		624	24,498,642	37,866,229	309,304	1.6	79	1,475,078
	Pribilof		243	9,916,617	14,886,705	126,438	1.5	78	794,901
	TOTAL	153	867	34,415,322	52,750,034	435,742	1.5	79	2,269,979
1982	Southeastern		468	10,207,174	13,079,583	257,193	1.3	40	422,979
	Pribilof		335	13,882,388	16,276,421	211,898	1.2	66	669,676
	TOTAL	122	803	24,089,562	29,355,374	469,091	1.2	51	1,092,655
1983	Southeastern		153	3,553,281	4,197,304	94,470	1.2	38	165,298
	Pribilof		239	19,076,553	20,514,000	153,458	1.0	124	1,078,643
	Northern		69	1,223,813	1,417,106	39,199	1.1	31	80,525
	TOTAL	109	461	23,853,647	26,128,410	287,127	1.1	83	1,324,466

-Continued-

Table 5-28. (page 2 of 4)

Season	Subdistrict	Number of			Harvest ^{a,b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings	Crab ^a					
1984	Southeastern		76	3,534,370	3,990,621	33,091	1.1	107	54,678
	Pribilof		230	17,909,096	19,727,493	112,078	1.1	160	708,706
	Northern		61	2,566,469	3,094,960	28,422	1.2	90	35,411
	TOTAL	52	367	24,009,935	26,813,074	173,591	1.1	138	798,795
1985	Southeastern	55	301	21,963,882	27,373,232	158,819	1.4	138	461,001
	Pribilof	60	301	24,089,526	29,804,093	142,937	1.2	169	505,146
	Northern	24	116	6,849,838	8,821,550	70,289	1.3	97	98,037
	TOTAL	75	718	52,903,246	65,998,875	372,045	1.3	142	1,064,184
1986	Southeastern	47	112	8,491,694	10,957,578	63,889	1.3	133	44,755
	Pribilof	80	508	39,851,767	50,525,150	281,337	1.3	142	472,342
	Northern	67	372	28,155,662	36,501,811	198,518	1.3	142	861,436
	TOTAL	88	992	76,499,123	97,984,539	543,744	1.3	141	1,378,533
1987	Southeastern	28	64	4,116,778	5,106,473	24,619	1.2	167	24,619
	Pribilof	94	458	38,604,802	47,676,734	261,337	1.2	148	261,337
	Northern	99	516	38,586,079	49,120,181	330,157	1.2	117	330,157
	TOTAL	103	1,038	81,307,659	101,903,388	616,113	1.2	132	978,449
1988	Eastern	162	770	59,811,702	75,781,258	431,310	1.3	139	775,104
	Western	151	515	45,904,635	58,278,927	335,597	1.3	137	2,484,916
	TOTAL	171	1,285	105,716,337	134,060,185	776,907	1.3	136	3,260,020
1989	Eastern	163	871	77,698,698	104,399,693	391,451	1.3	198	1,128,971
	Western	127	470	34,920,183	45,056,155	271,991	1.3	128	715,711
	TOTAL	168	1,341	112,618,881	149,455,848	663,442	1.3	170	1,844,682

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Table 5-28. (page 3 of 4)

Season	Subdistrict	Number of			Harvest ^{a,b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings	Crab ^a					
1990	Eastern	177	956	76,331,829	94,831,897	512,259	1.2	149	1,010,755
	Western	152	659	52,645,809	66,989,453	399,354	1.3	132	785,909
	TOTAL	189	1,565	128,977,638	161,821,350	911,613	1.3	141	1,796,664
1991	Eastern	218	2,013	190,139,612	240,090,666	912,751	1.3	208	1,593,021
	Western	186	867	74,984,348	88,556,603	478,832	1.2	157	1,871,015
	TOTAL	220	2,788	265,123,960	328,647,269	1,391,583	1.2	191	3,464,036
1992	Eastern	250	N/A	217,375,564	302,363,005	1,228,280	1.4	177	2,268,467
	Western	55	N/A	10,001,018	12,939,029	53,516	1.3	187	57,385
	TOTAL	250	2,763	227,376,582	315,302,034	1,281,796	1.4	177	2,325,852
1993	Eastern	251	1,384	110,760,099	151,328,721	675,996	1.4	164	1,108,520
	Western	185	633	58,798,743	79,458,279	295,050	1.4	199	465,432
	TOTAL	254	1,836	169,558,842	230,787,000	971,046	1.4	175	1,573,952
1994	Eastern	220	820	56,012,017	72,008,424	375,928	1.3	149	901,674
	Western	171	586	58,766,997	77,767,341	340,596	1.3	173	897,649
	TOTAL	273	1,293	114,779,014	149,775,765	716,524	1.3	160	1,799,323
1995	Eastern	217	627	32,630,348	39,736,986	313,910	1.2	104	657,051
	Western	153	357	27,981,063	35,515,691	192,892	1.3	145	630,118
	TOTAL	253	869	60,611,411	75,252,677	506,802	1.2	120	1,287,169
1996	Eastern	161	462	23,676,069	28,244,924	252,227	1.2	94	555,118
	Western	146	351	29,236,754	37,467,873	268,424	1.3	109	777,896
	TOTAL	234	766	52,912,823	65,712,797	520,651	1.2	102	1,333,014

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Table 5-28. (page 4 of 4)

Season	Subdistrict	Number of			Harvest ^{a,b}	Pots Pulled	Average Weight ^b	CPUE ^c	Deadloss ^b
		Vessels	Landings	Crab ^a					
1997	Eastern	225	1,040	88,486,602	105,648,771	649,319	1.2	136	2,115,217
	Western	83	164	11,488,937	13,894,253	104,821	1.2	110	236,338
	TOTAL	226	1,127	99,975,539	119,543,024	754,140	1.2	133	2,351,555
1998 ^d	Eastern	228	1,724	177,781,444	232,485,209	855,393	1.3	205	2,787,292
	Western	44	88	8,762,290	10,856,172	35,875	1.2	242	106,653
	TOTAL	229	1,767	186,543,734	243,341,381	891,268	1.3	207	2,893,945
1999 ^d	Eastern	236	1,386	102,209,222	134,135,696	656,276	1.3	156	1,237,770
	Western	121	388	39,646,982	48,565,812	242,767	1.2	163	590,543
	TOTAL	241	1,630	141,856,204	182,701,508	899,043	1.3	158	1,828,313
2000 ^d	Eastern	168	217	15,269,109	20,941,389	110,127	1.4	139	200,748
	Western	82	91	7,996,693	9,833,449	59,937	1.2	133	137,309
	TOTAL	229	287	23,265,802	30,774,838	170,064	1.3	137	338,057
2001 ^d	Eastern	163	219	8,877,103	12,575,815	114,044	1.4	78	224,266
	Western	85	115	8,308,420	10,806,231	62,866	1.3	132	205,618
	TOTAL	207	293	17,185,523	23,382,046	176,910	1.4	97	429,884

^aDeadloss included.^bIn pounds.^cDefined as catch of legal crab per pot pull.^dGeneral fishery only.

Table 5-29. Bering Sea District commercial snow crab catch by statistical area, 2001.

Area	Number of		Harvest ^{a,b}	Pots Pulled	Average		Deadloss ^b
	Landings	Crab ^a			CPUE ^c	Weight	
EASTERN SUBDISTRICT AREAS							
665500	4	96,452	146,024	1,045	92	1.51	932
665530	6	121,978	174,390	2,165	56	1.43	3,495
665600	5	58,292	87,369	865	67	1.50	5,456
675500	4	85,994	126,622	1,382	62	1.47	1,186
675530	31	735,499	1,073,052	11,363	65	1.46	14,939
675600	42	971,707	1,443,192	15,803	61	1.49	27,244
675630	7	95,707	142,903	1,853	52	1.49	1,154
685530	6	129,576	194,015	1,588	82	1.50	2,961
685600	42	1,228,300	1,815,391	20,027	61	1.48	23,175
685630	11	133,823	198,884	2,453	55	1.49	1,799
685700	3	16,825	23,883	452	37	1.42	231
705600	4	6,252	9,188	259	24	1.47	105
705630	4	55,720	79,702	652	85	1.43	793
715600	9	206,050	286,004	2,546	81	1.39	3,813
715630	28	631,931	859,590	7,863	80	1.36	15,137
715700	11	199,064	277,886	2,673	74	1.40	6,174
725600	5	162,698	225,651	2,080	78	1.39	4,072
725630	44	2,670,080	3,671,441	23,895	112	1.38	71,583
725700	31	830,940	1,133,960	9,377	89	1.36	22,038
725730	5	134,675	178,392	1,174	115	1.32	5,992
Other ^d	15	305,540	428,276	4,529	67	1.40	11,987
Subtotal	219	8,877,103	12,575,815	114,044	78	1.42	224,266
WESTERN SUBDISTRICT AREAS							
735630	4	173,730	228,294	1,820	95	1.31	3,262
735700	16	894,026	1,207,090	6,226	144	1.35	28,652
735730	29	1,227,474	1,622,160	10,645	115	1.32	46,994
735800	56	2,876,760	3,823,856	20,510	140	1.33	55,067
735830	15	434,348	557,821	2,906	149	1.28	8,927
745800	22	812,482	1,040,458	6,582	123	1.28	14,362
745830	12	433,169	537,170	2,781	156	1.24	9,356
745900	3	341,330	399,555	1,876	182	1.17	6,890
745930	3	261,918	351,533	1,429	183	1.34	5931
755900	3	69,610	89,069	560	124	1.28	1,009
755930	9	533,784	619,398	4,205	127	1.16	11,046
776000	4	795	1,068	170	5	1.34	0
786000	5	106,576	142,663	956	111	1.34	9,927
Other ^e	13	142,418	186,096	2,220	64	1.31	4,195
Subtotal	115	8,308,420	10,806,231	62,886	132	1.30	205,618
Total ^f	293	17,185,523	23,382,046	176,930	97	1.36	429,884

- Footnotes on Next Page -

Table 5-29. (page 2 of 2)

^aDeadloss included.

^bIn pounds.

^cDefined as catch of legal crabs per pot pull.

^dIncludes 12 statistical areas where less than three vessels made landings.

^eIncludes 9 statistical areas where less than three vessels made landings.

^fGeneral fishery only.

Table 5-30. Bering Sea District commercial snow crab harvest composition by fishing season, 1978/79-2001 seasons.

Season	Average		% New Shell	% <4" Landed
	Weight (pounds)	Width (mm) ^a		
1978/79	1.5	113.1	83.0	
1979/80	1.6	118.1	90.0	
1981	1.5	117.0	79.2	
1982	1.2	109.4	78.0	
1983 ^a	1.1	NA	NA	
1984 ^a	1.1	105.4	78.0	
1985 ^a	1.3	108.0	80.0	
1986 ^a	1.3	109.5	73.7	
1987 ^a	1.2	108.9	84.0	
1988 ^a	1.3	109.5	71.2	
1989 ^a	1.3	111.2	85.2	
1990 ^a	1.3	109.1	97.4	
1991 ^a	1.2	110.2	95.1	
1992	1.4	111.7	97.6	
1993	1.4	111.6	92.5	
1994	1.3	110.4	93.1	11.3
1995	1.2	108.6	89.6	17.2
1996	1.2	107.5	75.8	19.7
1997	1.2	107.3	96.5	17.3
1998 ^b	1.3	111.1	97.0	7.3
1999 ^b	1.3	110.3	97.7	8.0
2000 ^b	1.3	111.3	95.2	6.5
2001 ^b	1.4	111.3	95.2	5.3

^aPartial district and subdistrict closures, see Table 5-24.

^bGeneral fishery only.

Table 5-31. Economic performance of the Bering Sea District commercial snow crab fishery, 1979/80-2001 seasons.

Year	Value		Registered Pots ^b	Season Length ^c
	Exvessel	Fishery ^a		
1979/80	\$0.21	\$ 82.50	35,503	307
1981	\$0.26	\$ 13.10	39,789	229
1982	\$0.73	\$ 20.70	35,522	167
1983 ^d	\$0.35	\$ 8.70	15,396	120
1984 ^d	\$0.30	\$ 7.80	12,493	320
1985 ^d	\$0.30	\$ 19.50	15,325	333
1986 ^d	\$0.60	\$ 60.00	13,750	252
1987 ^d	\$0.75	\$ 75.70	19,386	158
1988 ^d	\$0.77	\$100.70	38,765	120
1989 ^d	\$0.75	\$110.70	43,607	112
1990 ^d	\$0.64	\$102.30	46,440	148
1991 ^d	\$0.50	\$162.60	76,056	159
1992	\$0.50	\$156.50	77,858	97
1993	\$0.75	\$171.90	65,081	59
1994	\$1.30	\$192.40	54,837	45
1995	\$2.43	\$180.00	53,707	33
1996	\$1.33	\$ 85.60	50,169	45
1997	\$0.79	\$ 92.60	47,036	65
1998 ^e	\$0.56	\$134.65	47,909	64
1999 ^e	\$0.88	\$160.78	50,173	66
2000 ^e	\$1.81	\$ 55.09	43,407	7
2001 ^e	\$1.53	\$ 32.12	40,379	30

^aMillions of dollars.

^bIncludes Tanner crab gear prior to 1992.

^cIn days.

^dPartial district and subdistrict closures, see Table 5-24.

^eGeneral fishery only.

Table 5-32. Bering Sea District grooved Tanner crab fishery data, 1992-2001.

Year	Number of		Harvest ^a (Pounds)	Pots Pulled	Exvessel Value	Fishery Value ^b	Average		Deadloss
	Vessels	Crabs ^a					Weight ^c	CPUE ^d	
1992					CONFIDENTIAL				
1993	6	342,095	658,796	35,650	\$0.94	\$0.60	1.9	9	71,000
1994	4	165,365	332,454	13,739	\$1.20	\$0.40	2	11	30,585
1995	8	38,313	1,005,721	60,993	\$1.40	\$1.31	2.1	7	69,177
1996	3	40,849	106,886	14,504	\$1.08	\$0.10	2.1	3	11,186
1997-1999					NO REPORTED LANDINGS				
2000	1				CONFIDENTIAL				
2001	1				CONFIDENTIAL				

^aDeadloss included.

^bMillions of dollars.

^cIn pounds.

^dNumber of legal crabs per pot lift.

Table 5-33. Bering Sea District triangle Tanner crab fishery data, 1992-2001.

Year	Number of		Harvest (pounds)	Pots Pulled	Exvessel Value	Fishery Value ^b	Average		Deadloss
	Vessels	Crabs ^a					Weight ^c	CPUE ^d	
1992-1994					NO REPORTED LANDINGS				
1995	4	41,914	49,007	22,180	\$1.35	\$0.05	1.2	1	14,147
1996	1				CONFIDENTIAL				
1997-1999					NO REPORTED LANDINGS				
2000	1				CONFIDENTIAL				
2001	1				CONFIDENTIAL				

^aDeadloss included.

^bMillions of dollars.

^cIn pounds.

^dNumber of legal crabs per pot lift.

Table 5-34. Bering Sea hair crab fishery data, 1978-2001.

Year	Number of		Crab ^a	Harvest ^{a,b}	Pots		Average		Deadloss
	Vessels	Landings			Registered	Pulled	CPUE ^c	Weight ^b	
1978/79	11	16	2,457	5,213		9,908	<1	2.1	0
1979/80	9	17	25,417	53,914		14,506	2	2.1	0
1980/81	67	192	1,127,309	2,439,483		172,695	7	2.2	265,369
1981/82	48	159	466,560	932,584		117,518	4	2.0	29,749
1982/83	52	161	575,453	1,211,420		84,346	7	2.1	122,456
1983/84	19	48	200,670	406,538		20,414	10	2.0	28,062
1984 ^d	7	26	197,209	396,630		22,392	9	2.0	19,436
1985 ^d	3	9	34,410	66,042		3,905	9	2.0	593
1986 ^d	3	7	7,289	14,835		4,720	2	2.0	500
1987 ^e	2				CONFIDENTIAL				
1988 ^d					NO LANDINGS				
1989 ^d					NO LANDINGS				
1990 ^d					NO LANDINGS				
1991 ^d	7	42	441,533	377,708		44,444	10	.9	0
1992 ^{d,e}	9	20	203,758	240,767		38,808	5	1.2	11,495
1992 ^{d,f}	10	47	1,127,948	1,198,590		125,943	9	1.1	65,674
1993 ^{d,e}	4	5	2,347	3,038		9,345	<1	1.3	0
1993/94 ^{d,f,g,h}	19	129	1,936,795	2,331,686		585,913	3	1.2	124,596
1994 ^{d,f}	10	55	897,070	1,199,246	13,350	287,954	3	1.3	49,275
1995 ^{d,f}	21	81	1,485,097	2,059,988	25,750	441,494	3	1.4	73,882

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Table 5-34. (Page 2 of 2)

Year	Number of		Crab ^a	Harvest ^{a,b}	Pots		Average		Deadloss
	Vessels	Landings			Registered	Pulled	CPUE ^c	Weight ^b	
1996 ^d	19	99	485,735	745,804	20,680	410,548	1	1.5	32,495
1997 ^d	16	52	420,121	668,096	18,180	211,970	2	1.6	17,522
1998 ^d	12	31	188,784	307,739	14,330	128,495	2	1.6	17,392
1999 ^d	8	27	139,894	221,656	9,840	92,333	1	1.6	4,677
2000 ^d	3	3	1,058	1,546	3,900	3,300	<1	1.5	0
2001	NO COMMERCIAL FISHERY								

^aDeadloss included.^bIn pounds.^cNumber of legal crabs per pot pull.^dPermit fishery.^eSpring fishery.^fFall fishery.^gFishery opened Nov. 1, 1993 and closed April 20, 1994.^hIncludes seven vessels that landed hair crab incidental to Tanner crab.

Table 5-35. Bering Sea hair crab fishery economic performance data, 1978/79-2001.

Year	GHL ^a	Value		Season	
		Exvessel ^b	Total ^c	Days	Dates
1978/79		\$0.54	\$0.003	257	04/19-12/31
1979/80		\$0.75	\$0.04	244	01/01-08/30
1980/81		\$0.80	\$1.7	242	11/01-06/30
1981/82		\$0.55	\$0.5	288	11/01-08/15
1982/83		\$0.65	\$0.7	297	10/08-08/01
1983/84		\$1.20	\$0.5	335	08/01-06/30
1984		\$1.60	\$0.6	184	07/01-12/31
1985		\$1.60	\$0.1	365	01/01-12/31
1986		\$1.15	\$0.2	365	01/01-12/31
1987		CONFIDENTIAL		365	01/01-12/31
1988		NO LANDINGS			
1989		NO LANDINGS			
1990		NO LANDINGS			
1991		\$3.08	\$1.2	365	01/01-12/31
1992		\$2.25	\$0.5	32	01/01-06/04
1992		\$2.46	\$2.8	156	10/01-11/01
1993		NA	NA	45	04/01-05/15
1993/94	3	\$2.42	\$5.3	171	11/01-04/20
1994	1.1	\$3.55	\$4.0	41	11/01-12/12
1995	1.8	\$2.87	\$5.7	25	11/01-11/26
1996	0.9	\$2.65	\$1.9	31	11/01-12/02
1997	0.8	\$2.97	\$1.9	25	11/01-11/25
1998	0.4	\$2.70	\$0.8	16	10/8-10/23
1999	0.3	\$3.20	\$0.7	37	10/30-12/7
2000	0.3	\$3.84	\$0.005	7	10/30-11/5
2001		NO LANDINGS			

^aGuideline harvest level, millions of pounds.

^bPrice per pound.

^cIn millions of dollars.

Table 5-36. Bering Sea octopus incidental harvest by season, 1995-2001.

Year	Number of		Harvest ^b	
	Vessels	Landings ^a	Total ^c	Landed
1995 ^d	30	76	17,730	11,967
1996	38	104	27,226	5,337
1997	27	47	12,232	6,997
1998	30	48	9,542	3,855
1999	7	8	6,961	376
2000	50	128	39,944	16,303
2001	62	163	50,947	8,982

^aAll landings incidental to other fisheries.

^bNumbers from State Groundfish Tickets (Neptune database).

^cDiscards at sea included.

^dThe 1995 directed fishery data is confidential, and is not included in this table.

Table 5-37. Bering Sea snail catch statistics by season, 1992 - 2001.

Year	Number of		Number of Pots		Harvest ^a	CPUE	Pounds per pot ^b	Deadloss
	Vessels	Landings	Registered	Pulled				
1992			CONFIDENTIAL					
1993	4	10	13,800	44,686	312,876	25	7.0	NA ^c
1994	4	42	14,850	279,349	2,027,328	21	7.26	62,571
1995	4	38	18,800	262,096	2,352,825	28	8.98	22,371
1996	5	67	31,300	741,326	3,572,992	16	4.82	62,494
1997	3	17	14,500	191,893	932,048	16	4.86	77,131
1998			NO REPORTED LANDINGS					
1999			NO REPORTED LANDINGS					
2000			NO REPORTED LANDINGS					
2001			NO REPORTED LANDINGS					

^aDeadloss included.

^bWhole weight.

^cData not available.

Table 5-38. Bering Sea snail economic performance, 1992-2001.

Year	Season Total ^a	Number of		Value	
		Vessels	Landings	Exvessel	Total
1992		CONFIDENTIAL			
1993	312,876	4	10	\$0.40	\$125,150
1994	1,964,757	4	42	\$0.34	\$668,017
1995	2,330,454	4	38	\$0.30	\$699,136
1996	3,510,498	5	67	\$0.30	\$1,053,149
1997	854,917	3	17	\$0.36	\$307,770
1998		NO REPORTED HARVEST			
1999		NO REPORTED HARVEST			
2000		NO REPORTED HARVEST			
2001		NO REPORTED HARVEST			

^aWeight in pounds.

Table 5-39. North Peninsula District Dungeness crab fishery statistics, 1992-2001.

Year	Number of		Harvest ^a	Pots Pulled	Value		Average		Deadloss
	Vessels	Crabs ^a			Exvessel	Total ^b	Weight ^c	CPUE	
1992					NO REPORTED HARVEST				
1993	2				CONFIDENTIAL				
1994	2				CONFIDENTIAL				
1995	6	63,732	134,407	34,499	\$1.32	\$0.18	2.1	4	367
1996	1				CONFIDENTIAL				
1997	2				CONFIDENTIAL				
1998	1				CONFIDENTIAL				
1999					NO REPORTED HARVEST				
2000	1				CONFIDENTIAL				
2001					NO REPORTED HARVEST				

^aDeadloss included.

^bMillions of dollars.

^cIn pounds.

Table 5-40. The Community Development Quota (CDQ) Program percent allocation by crab fishery group.

Fishery	Group ^a					
	APICDA	BBEDC	CBSFA	CVRF	NSEDC	YDFDA
Bristol Bay Red King Crab	18	18	10	18	18	18
Pribilof Red & Blue King Crab	0	0	100	0	0	0
St. Mathew Blue King Crab	50	12	0	12	14	12
Norton Sound Red King Crab	0	0	0	0	50	50
Bering Sea Snow Crab	10	19	19	17	18	17
Bering Sea Tanner Crab	10	19	19	17	18	17

^aAPICDA (Aleutian Pribilof Island Community Development Association).

BBEDC (Bristol Bay Economic Development Corporation).

CBSFA (Central Bering Sea Fishermen's Association).

CVRF (Coastal Villages Region Fund).

NSEDC (Norton Sound Economic Development Corporation).

YDFDA (Yukon Delta Fisheries Development Association).

Table 5-41. The crab Community Development Quota (CDQ) Program fisheries statistics.

Fishery Year	Allocation ^a	Number of			Harvest ^{a,b}	Deadloss ^a	CPUE ^c
		Vessels	Landings	Crabs			
Bristol Bay Red King Crab							
1998	525,115 ^a			Confidential			
1999	580,641 ^a			Confidential			
2000	610,265 ^a			Confidential			
2001	617,623 ^a			Confidential			
Pribilof Red King Crab							
1998	35,958 ^{ad}			Confidential			
1999				No Fishery			
2000				No Fishery			
2001				No Fishery			
Pribilof Blue King Crab							
1998	35,958 ^{ad}			Confidential			
1999				No Fishery			
2000				No Fishery			
2001				No Fishery			
St. Matthew Blue King Crab							
1998	99,514 ^a			Confidential			
1999				No Fishery			
2000				No Fishery			
2001				No Fishery			
Bering Sea Snow Crab							
1998	8,886,634 ^a	20	86	6,975,242	8,846,977	134,898	174
1999	9,674,326 ^a	23	104	7,747,876	9,628,858	92,871	165
2000	2,518,760 ^a			Confidential			144
2001	1,878,070 ^a			Confidential			98
Bering Sea Tanner Crab							
1998				No Fishery			
1999				No Fishery			
2000				No Fishery			
2001				No Fishery			

^aIn pounds.^bIncludes deadloss.^cDefined as legal crabs per pot pull.^dIncludes Pribilof red & blue king crab.

Table 5-42. The crab Community Development Quota (CDQ) Program economic overview.

Fishery Year	Harvest ^a	Exvessel Value	Fishery Value	Average Weight ^a	Pots Registered	Pots Pulled
Bristol Bay Red King Crab						
1998			Confidential			
1999			Confidential			
2000			Confidential			
2001			Confidential			
Pribilof Red King Crab						
1998			Confidential			
1999			No Fishery			
2000			No Fishery			
2001			No Fishery			
Pribilof Blue King Crab						
1998			Confidential			
1999			No Fishery			
2000			No Fishery			
2001			No Fishery			
St. Matthew Blue King Crab						
1998			Confidential			
1999			No Fishery			
2000			No Fishery			
2001			No Fishery			
Bering Sea Snow Crab						
1998	8,846,977	\$ 0.54	\$ 4,704,523	1.3	4,016	39,575
1999	9,628,858	\$ 0.85	\$ 8,105,782	1.2	5,250	46,490
2000			Confidential			
2001			Confidential			
Bering Sea Tanner Crab						
1998			No Fishery			
1999			No Fishery			
2000			No Fishery			
2001			No Fishery			

^aIn pounds, live weight only.

Table 5-43. Pot Limits for Bering Sea king and Tanner crab fisheries, 2001-2002.

Fishery	GHL Range (Million Pounds)	Number of Vessels	Pot Limits	
			<= 125 ^a	> 125 ^a
Norton Sound Section king Crab ^b	-	-	40	50
St. Lawrence Island Section king Crab ^b	-	-	40	50
Pribilof Island Section king Crab ^b	-	-	40	50
St. Matthew Island Section king Crab ^b	-	-	60	75
Bering Sea District Tanner Crab ^b	-	-	200	250
Bristol Bay red king Crab ^c	< 4.0	NA	NA	NA
	4.0 to 5.9	< 200	80	100
		200 to 250	60	75
		> 250	60	75
	6.0 to 8.9	< 200	120	150
		200 to 250	100	125
		> 250	100	125
	9.0 to 12	< 200	200	250
		200 to 250	160	200
		> 250	160	200
	> 12	Any	200	250

^aVessel length overall in feet.

^bPot limits independent of number of registered vessels and GHL.

^cMulti-tiered pot limits effective 1997.

Table 5-44. Number of buoy tags printed and issued by fishery, 2001-2002.

Fishery	Number of Tags Ordered ^a	Tag Sets Issued		Total Sets	Tags Issued		Replct. Tags	Total Tags
		<= 125' ^b	> 125' ^b		<= 125' ^b	> 125' ^b		
South Peninsula grooved Tanner crab	Surplus Tags							
Pribilof red and blue king crab	Tags in Storage							
Pribilof red and blue king crab CDQ ^c	Tags in Storage							
Pribilof golden king crab	Surplus Tags	6	0	6	240	0	9	249
St. Matthew blue king crab	Tags in Storage							
St. Matthew blue king crab CDQ	Tags in Storage							
St. Matthew golden king crab ^d	Surplus Tags	1	0	1	60	0	0	60
Bristol Bay red king crab	65,000	163	70	233	16,156	8,620	4	24,780
Bristol Bay red king crab CDQ	Surplus Tags	8	2	10	909	250	0	1,159
Bering Sea Tanner Crab	Tags in Storage							
Bering Sea Tanner Crab CDQ	Tags in Storage							
Bering Sea snow crab	62,500	127	65	192	22,969	15,064	36	38,069
Bering Sea snow crab CDQ	Surplus Tags	8	2	10	1,485	500	0	1,985
Totals	127,500	313	139	452	41,819	24,434	49	66,302

^aTags ordered in sets of 250, then separated per each fishery's pot limit.

^bVessel length overall in feet.

^cCommunity Development Quota.

^dPot limits independent of number of registered vessels and GHL.

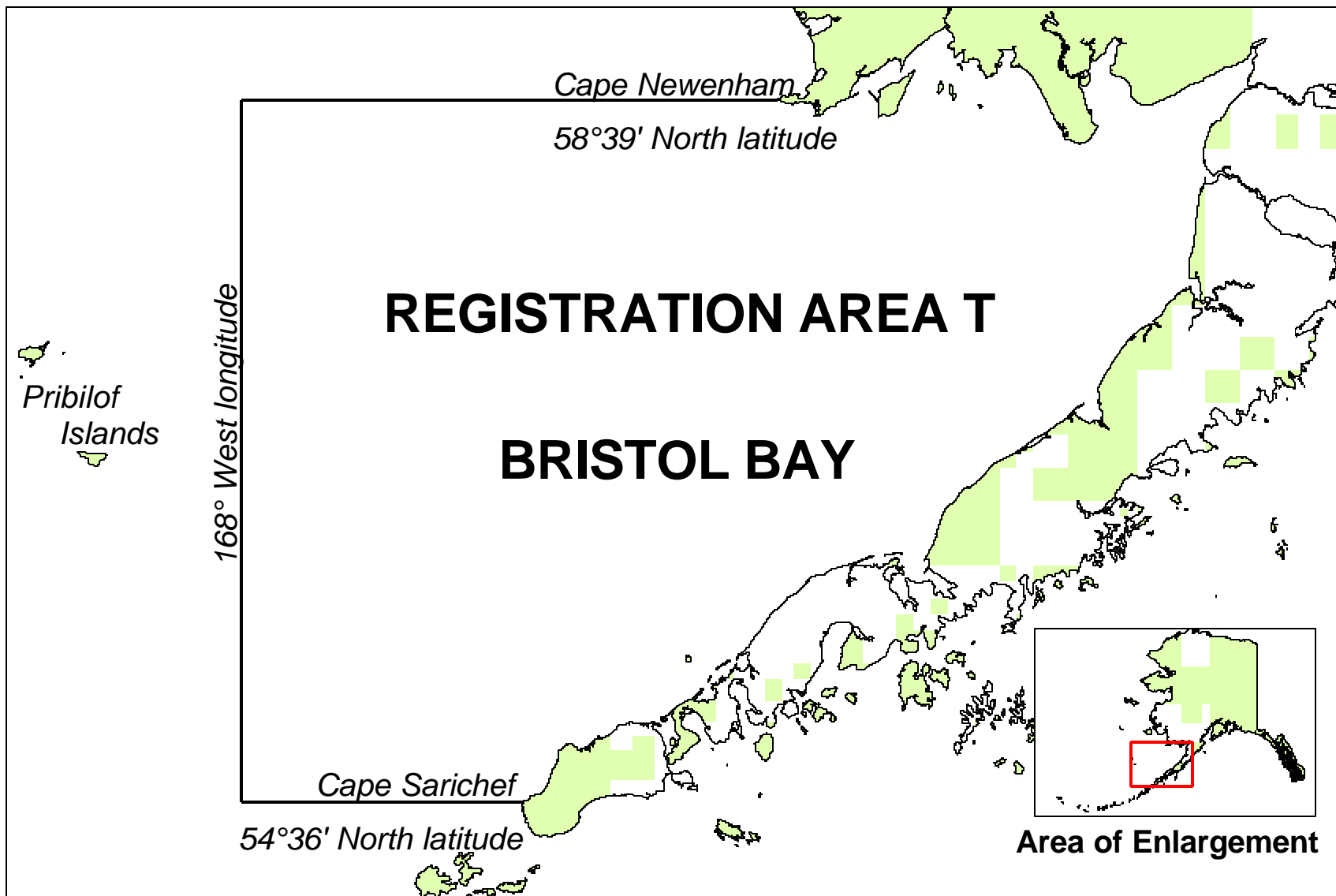


Figure 5-1. King crab Registration Area T (Bristol Bay).

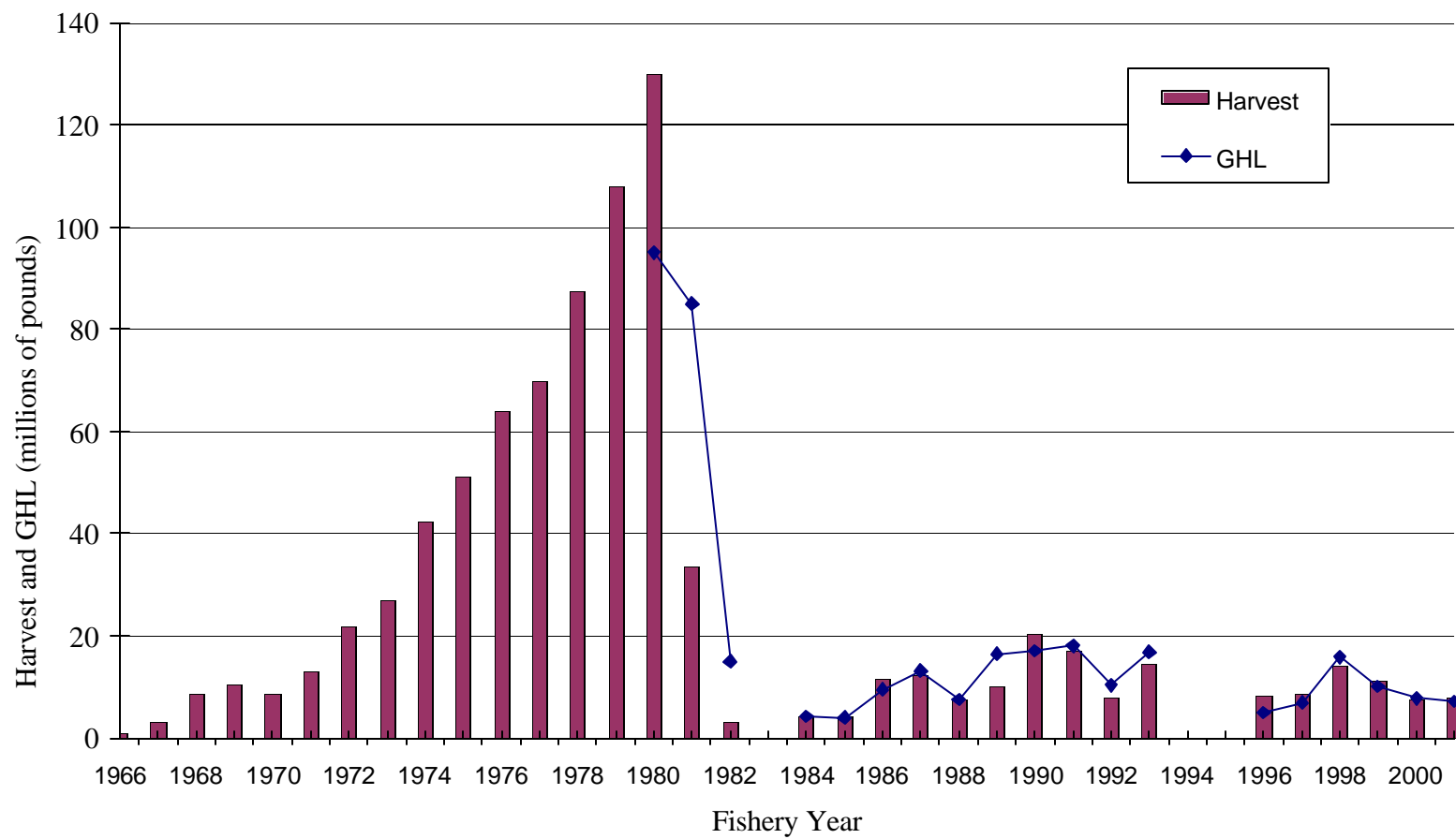


Figure 5-2. Historic Bristol Bay red king crab harvest and guideline harvest levels, 1966-2001.

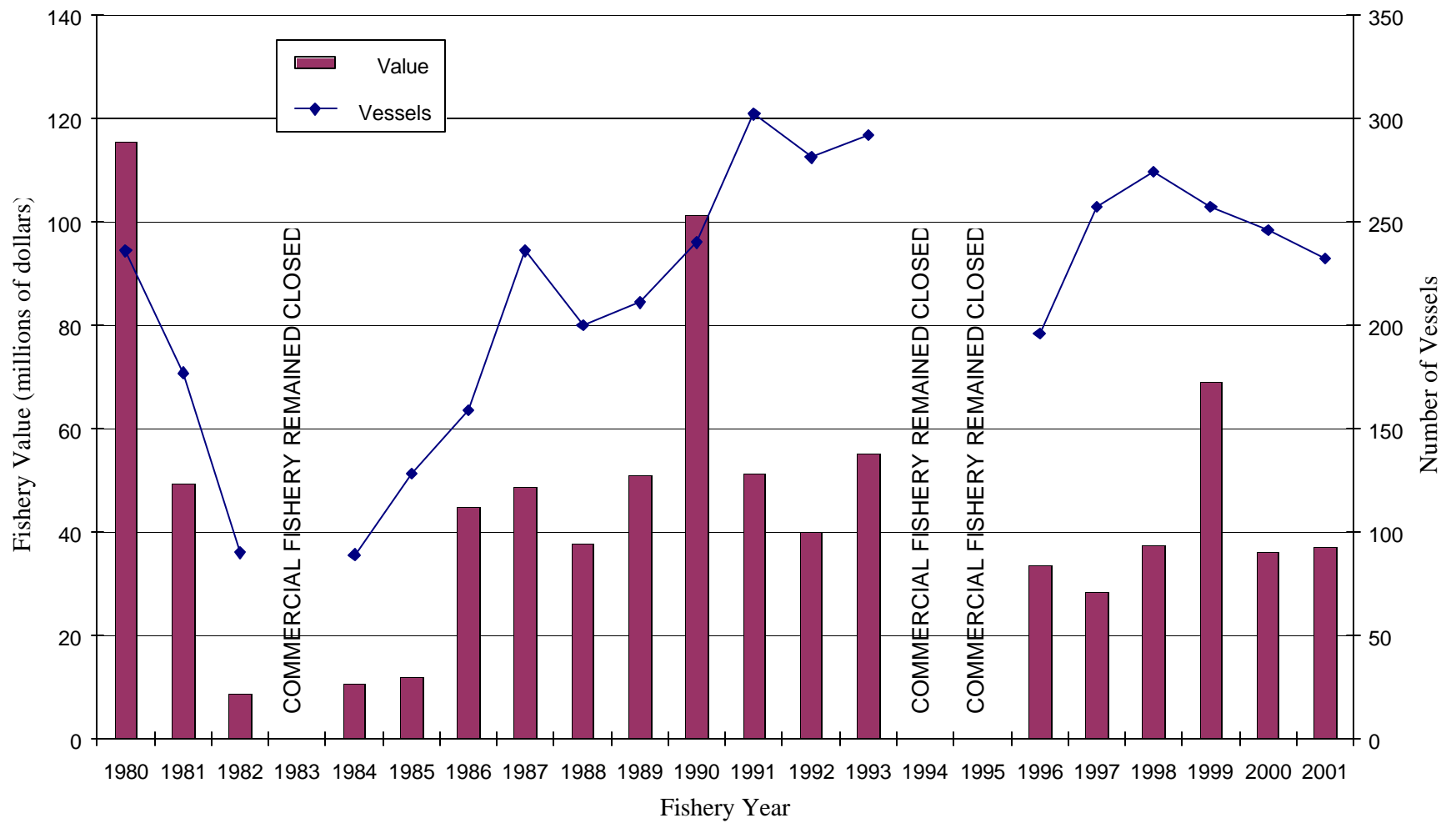


Figure 5-3. Economic performance of the Bristol Bay red king crab fishery in terms of vessel effort and total fishery value, 1980-2001.

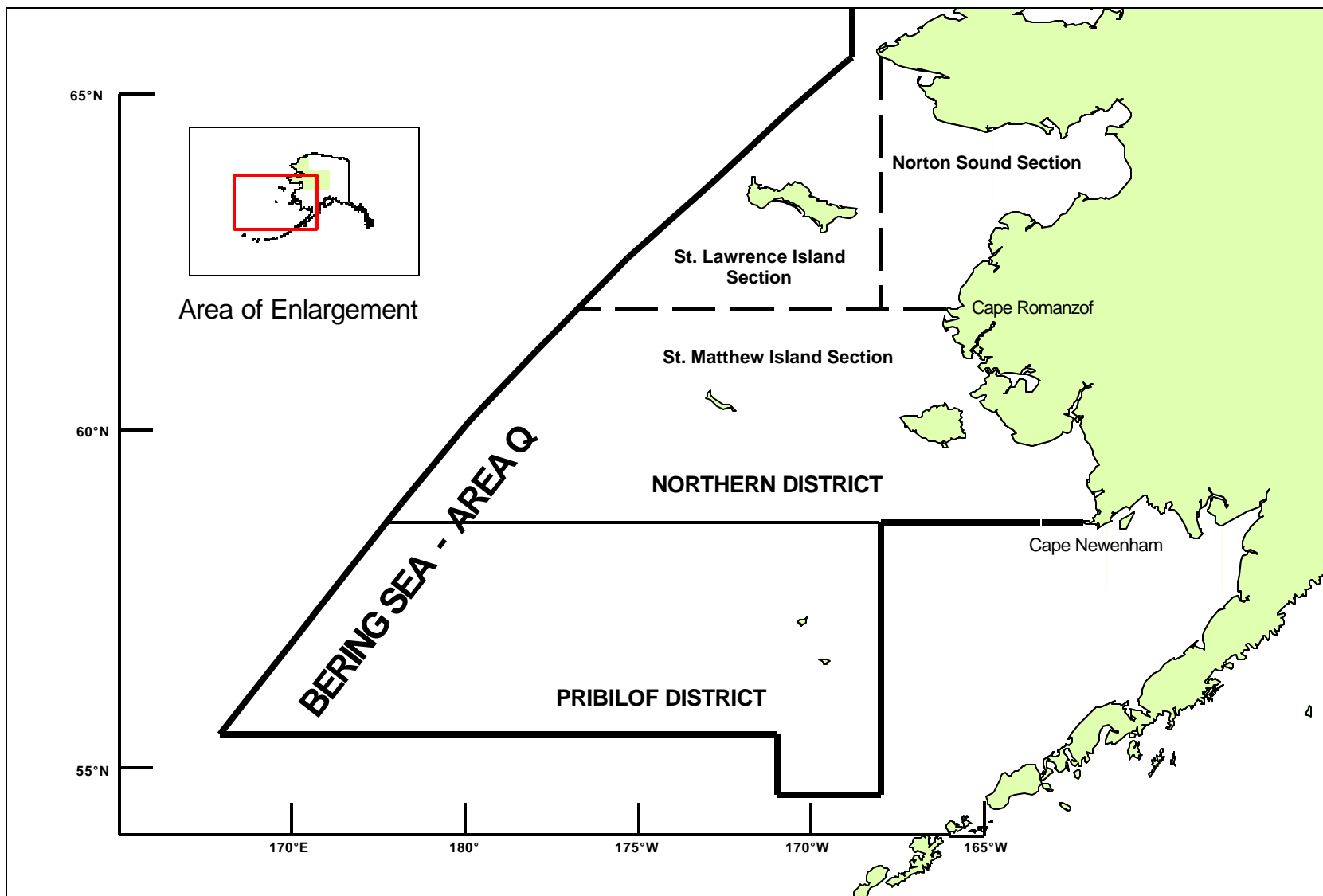


Figure 5-4. King crab Registration Area Q (Bering Sea).

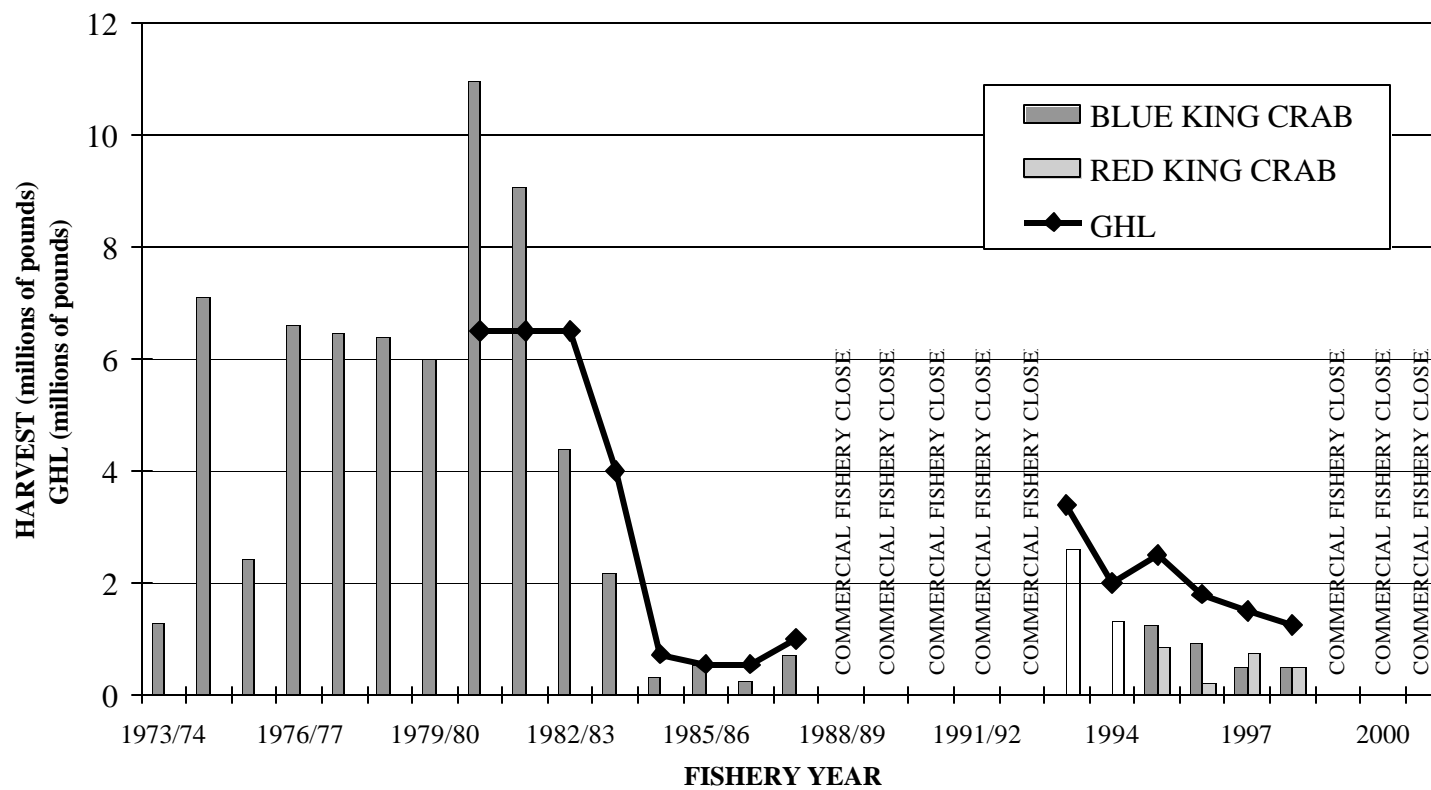


Figure 5-5. Historic red and blue king crab harvest in pounds and guideline harvest level for the Pribilof District, 1973 - 2001.

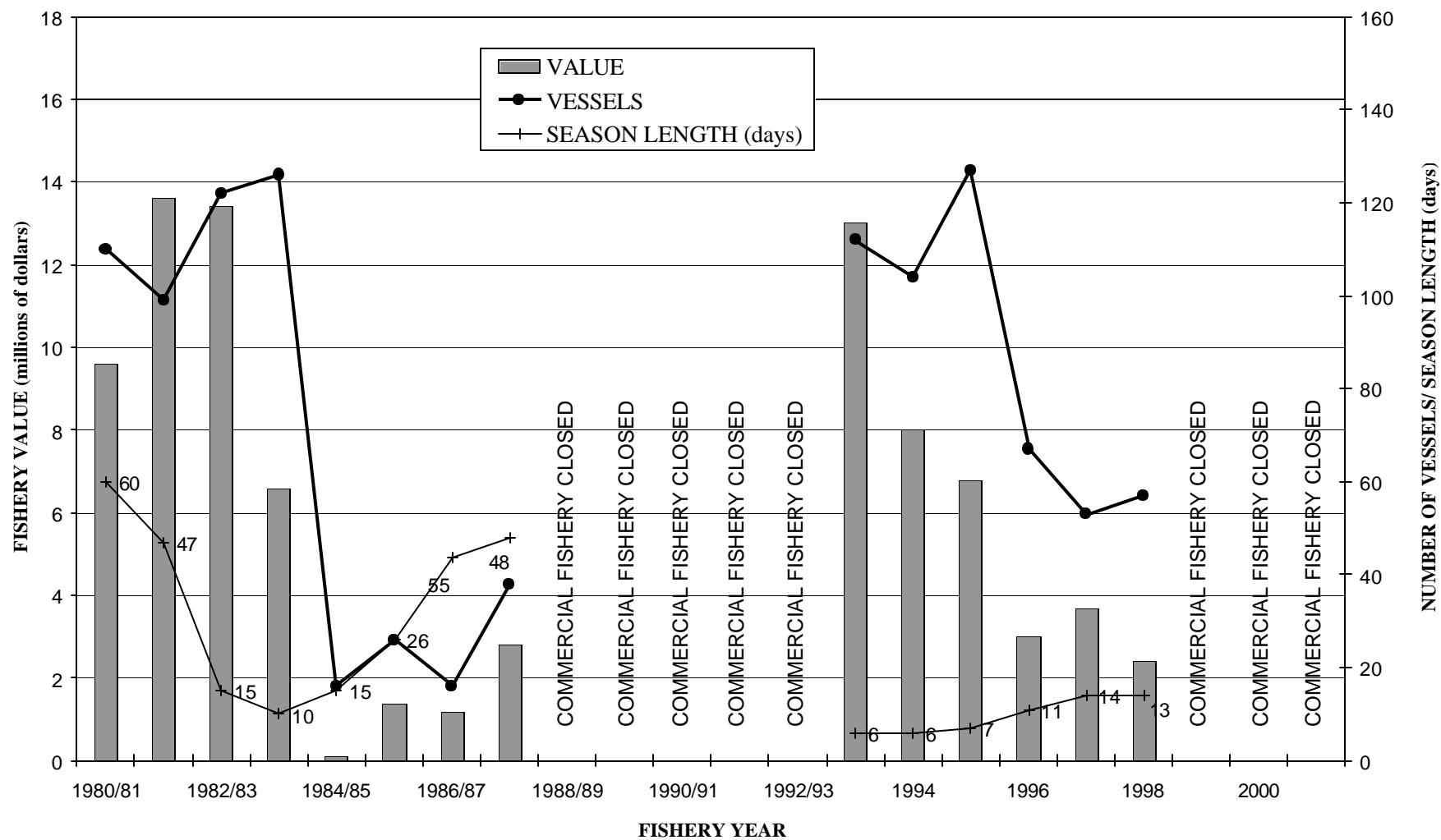


Figure 5-6. Number of vessels, season length, and total fishery value of the Pribilof District king crab fishery, 1980-2001.

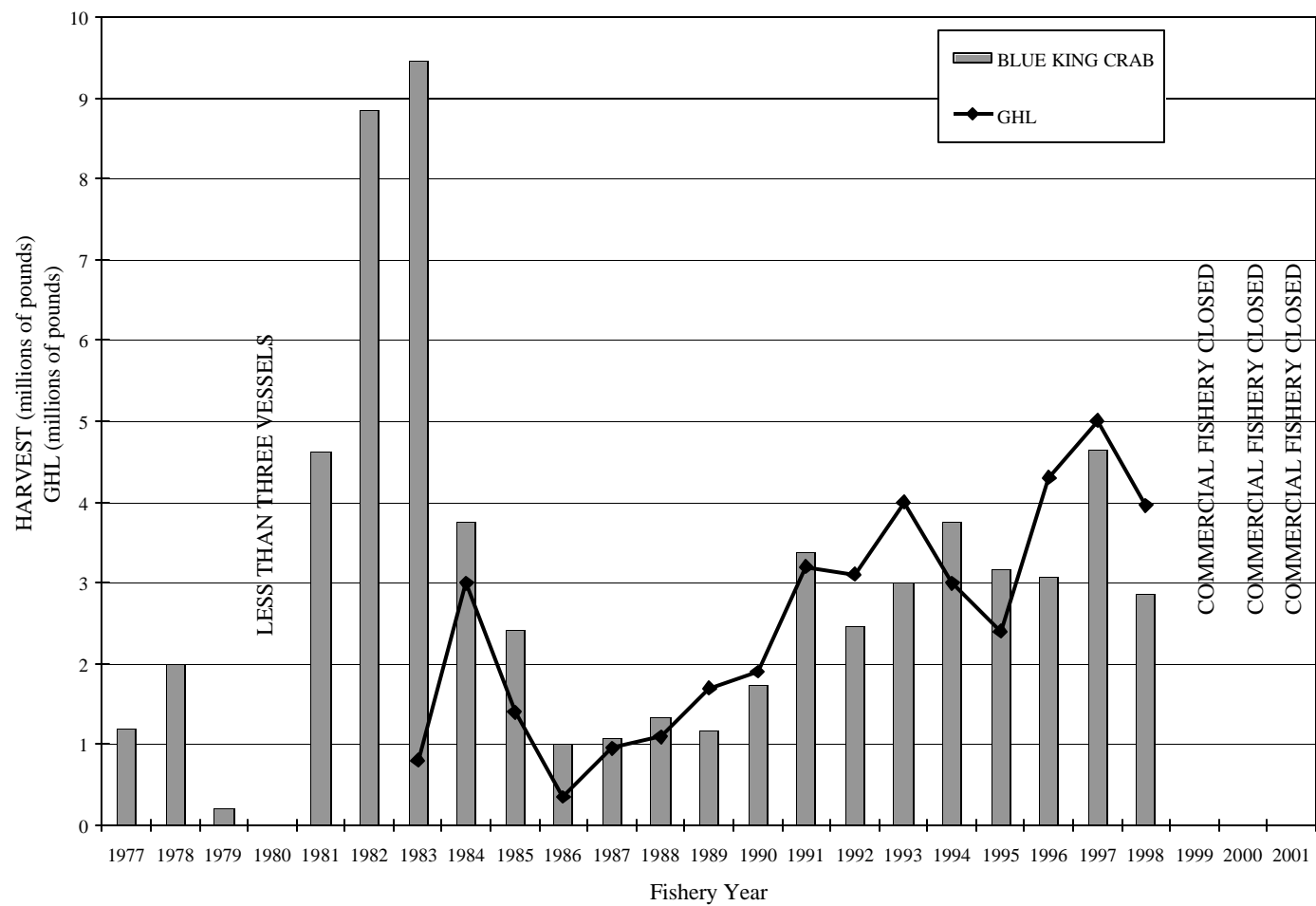


Figure 5-7. Historic blue king crab harvest and guideline harvest level for the St. Matthew Island Section, 1977-2001.

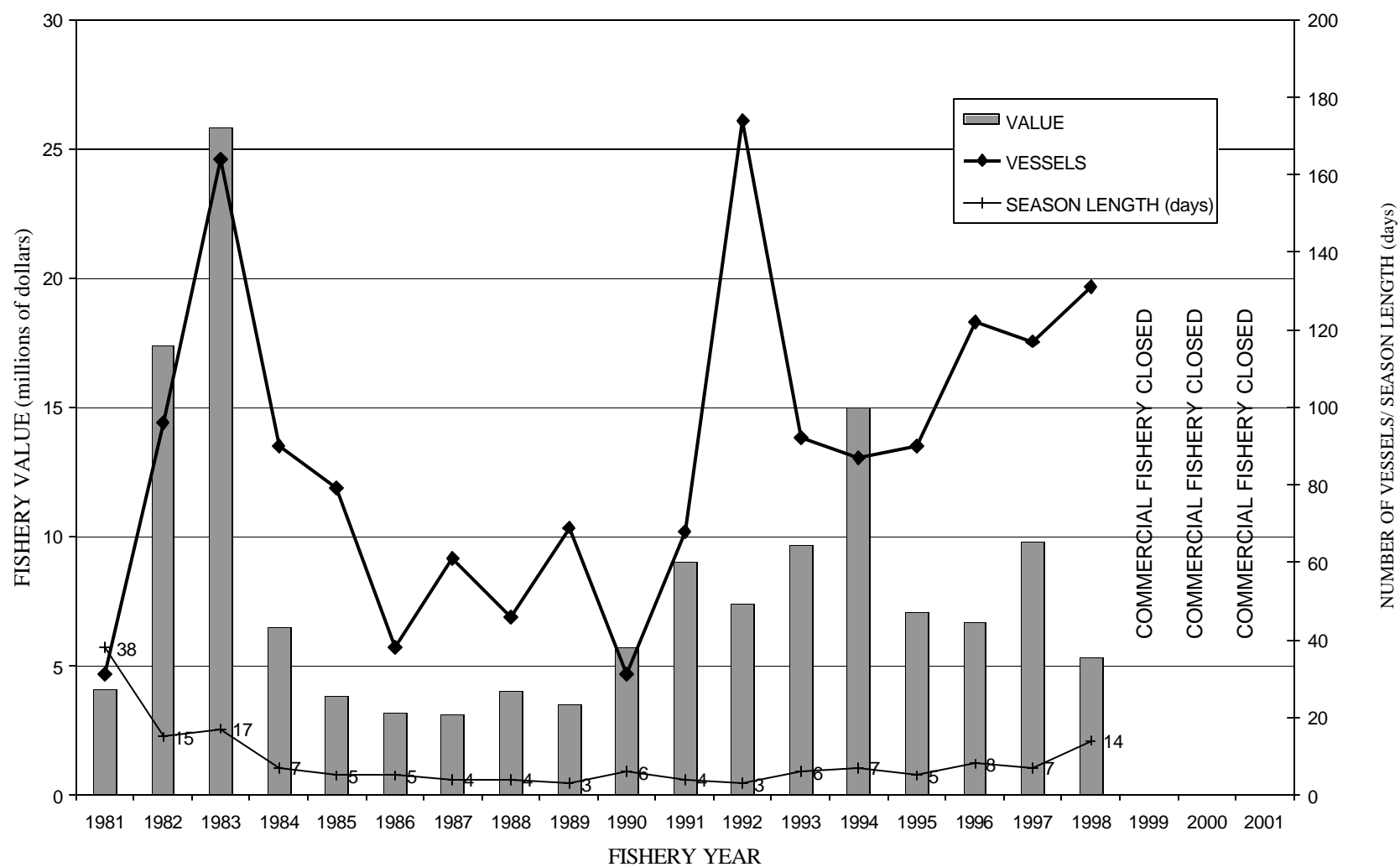


Figure 5-8. Total effort, season length (days) and total fishery value of the St. Matthew Island king crab fishery, 1981-2001.

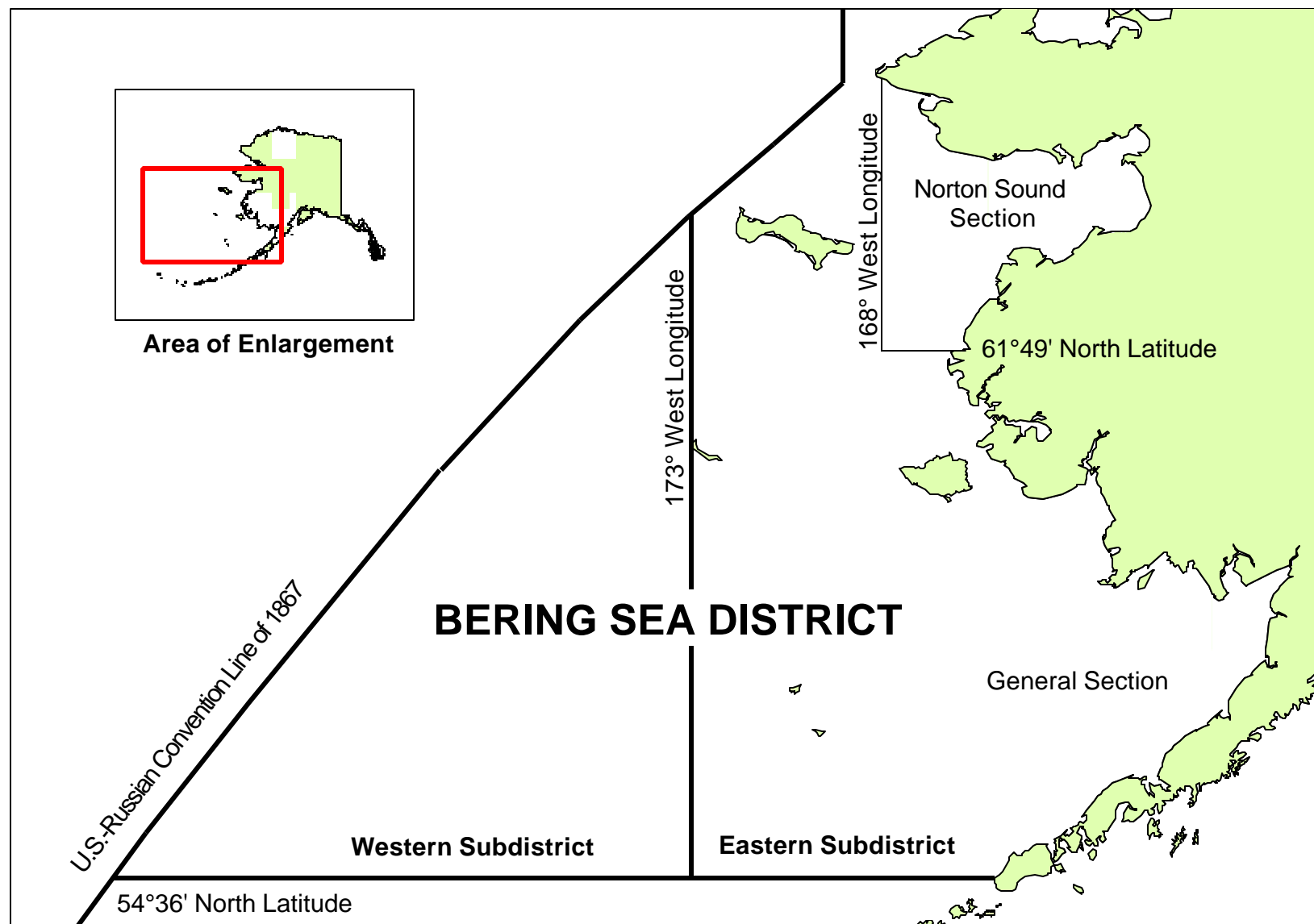


Figure 5-9. Bering Sea District of Tanner crab Registration Area J showing subdistricts and sections.

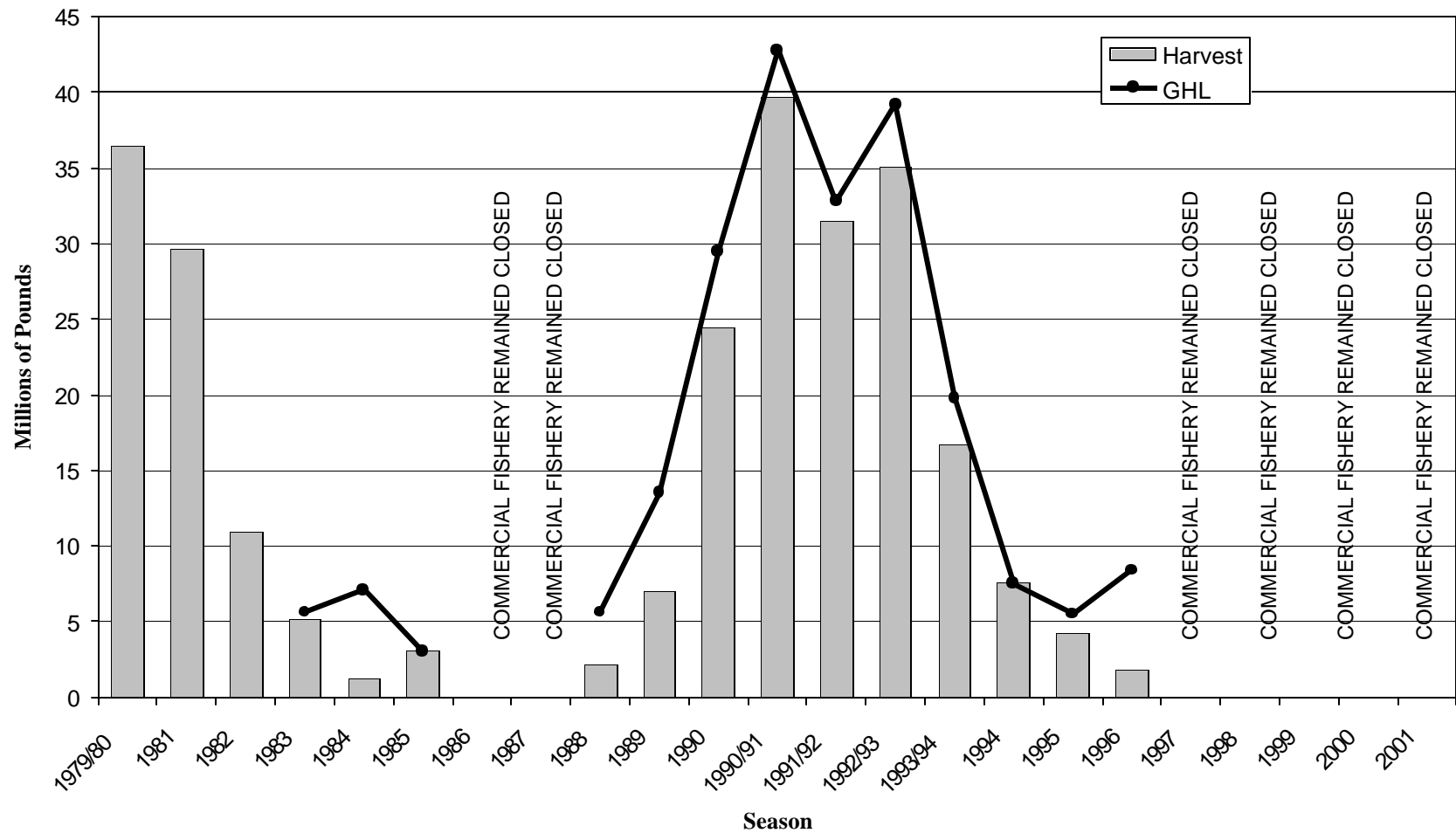


Figure 5-10. Bering Sea Tanner crab harvest and guideline harvest levels, 1979-2001.

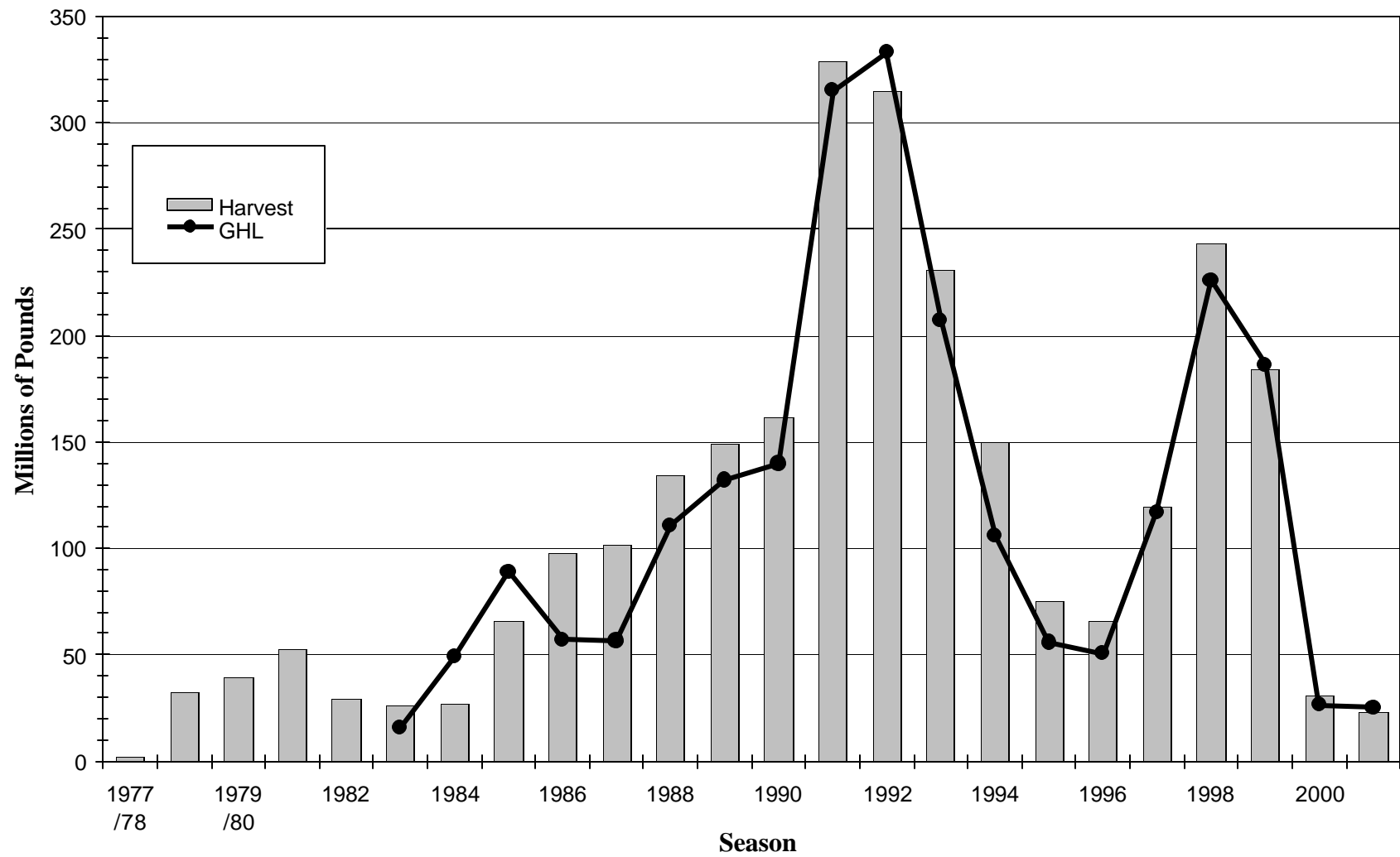


Figure 5-11. Harvest and guideline harvest level for the Bering Sea snow crab fishery, 1977-2001.

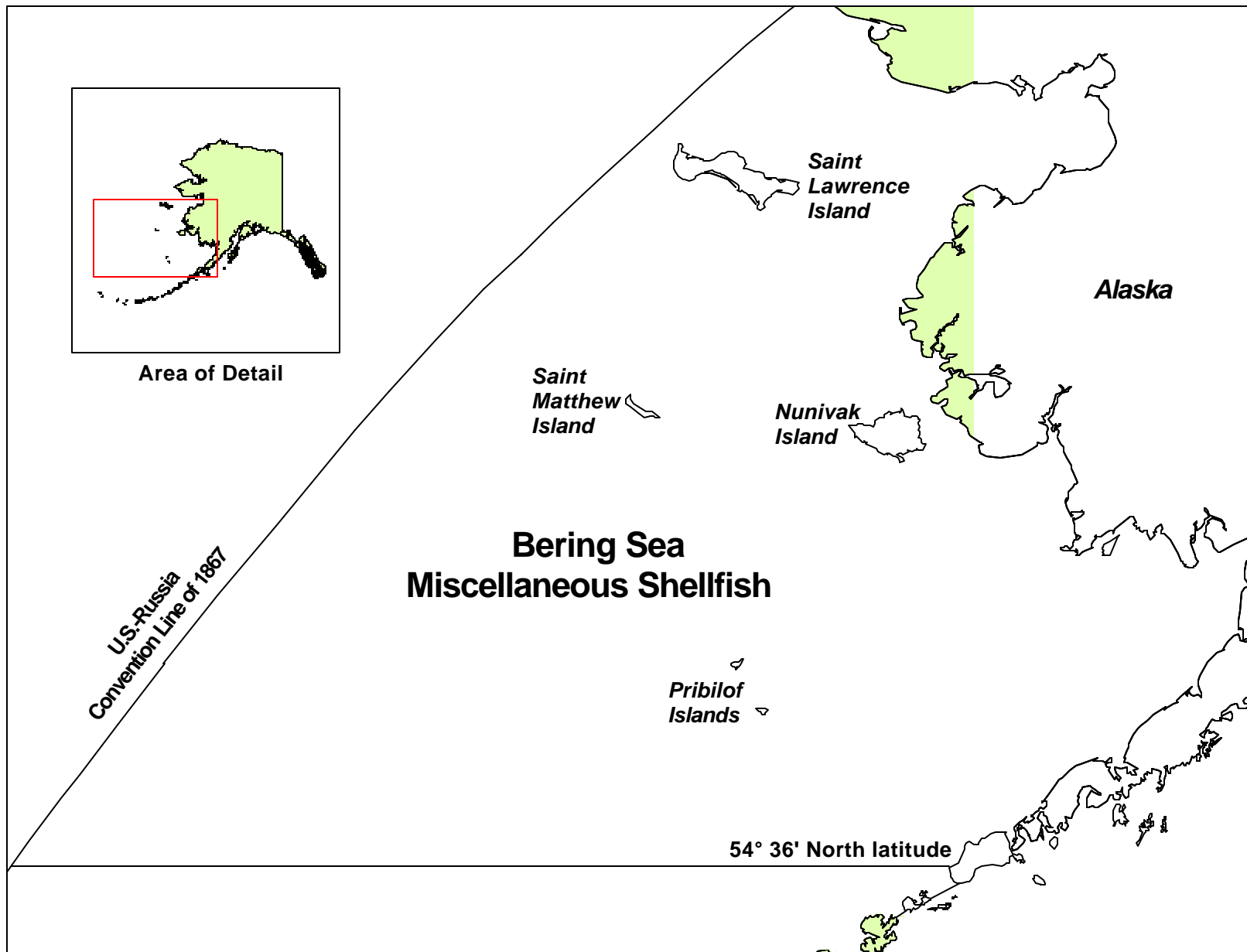


Figure 5-12. The Bering Sea portion of miscellaneous shellfish Registration Area J.

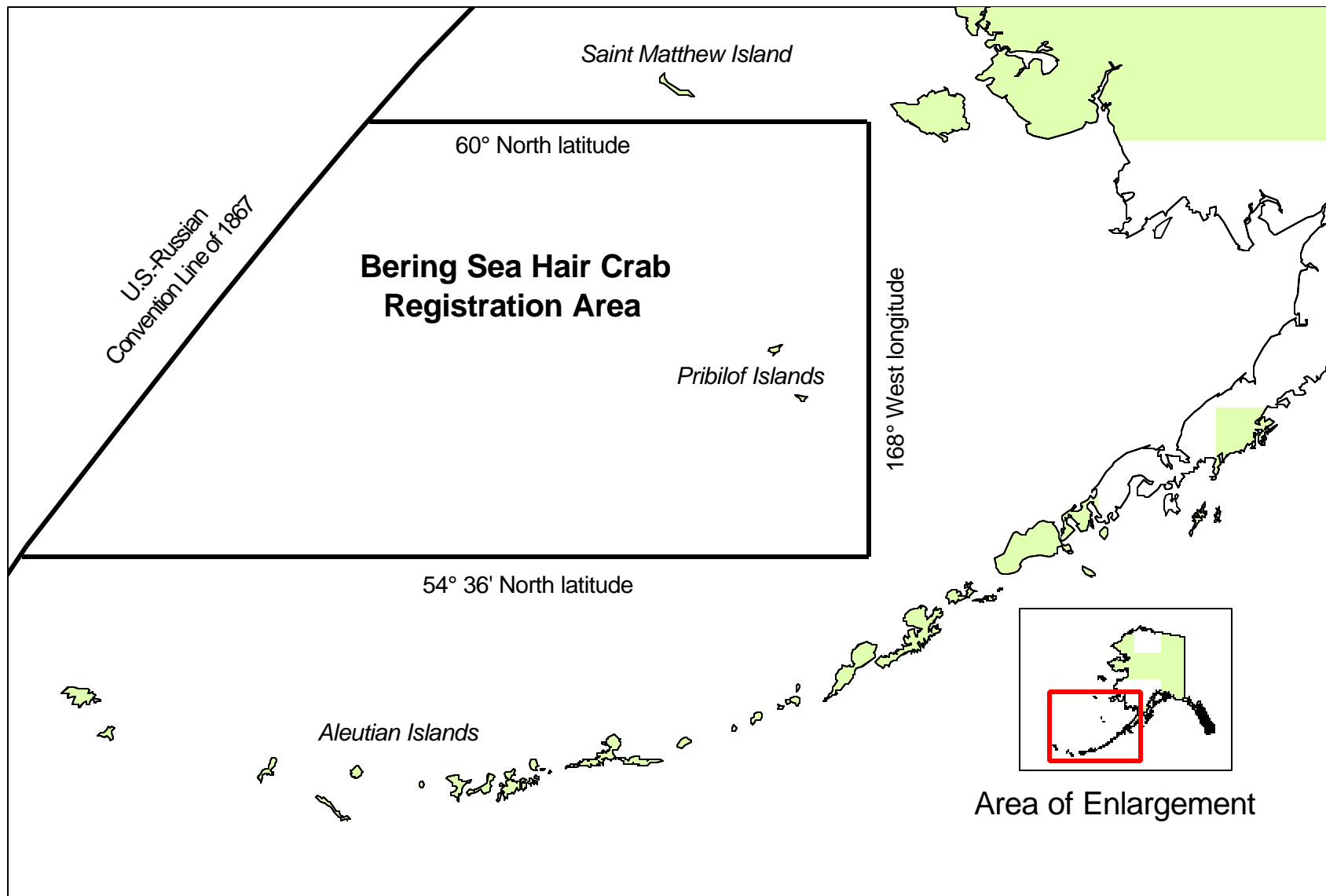


Figure 5-13. Bering Sea hair crab fishing area.

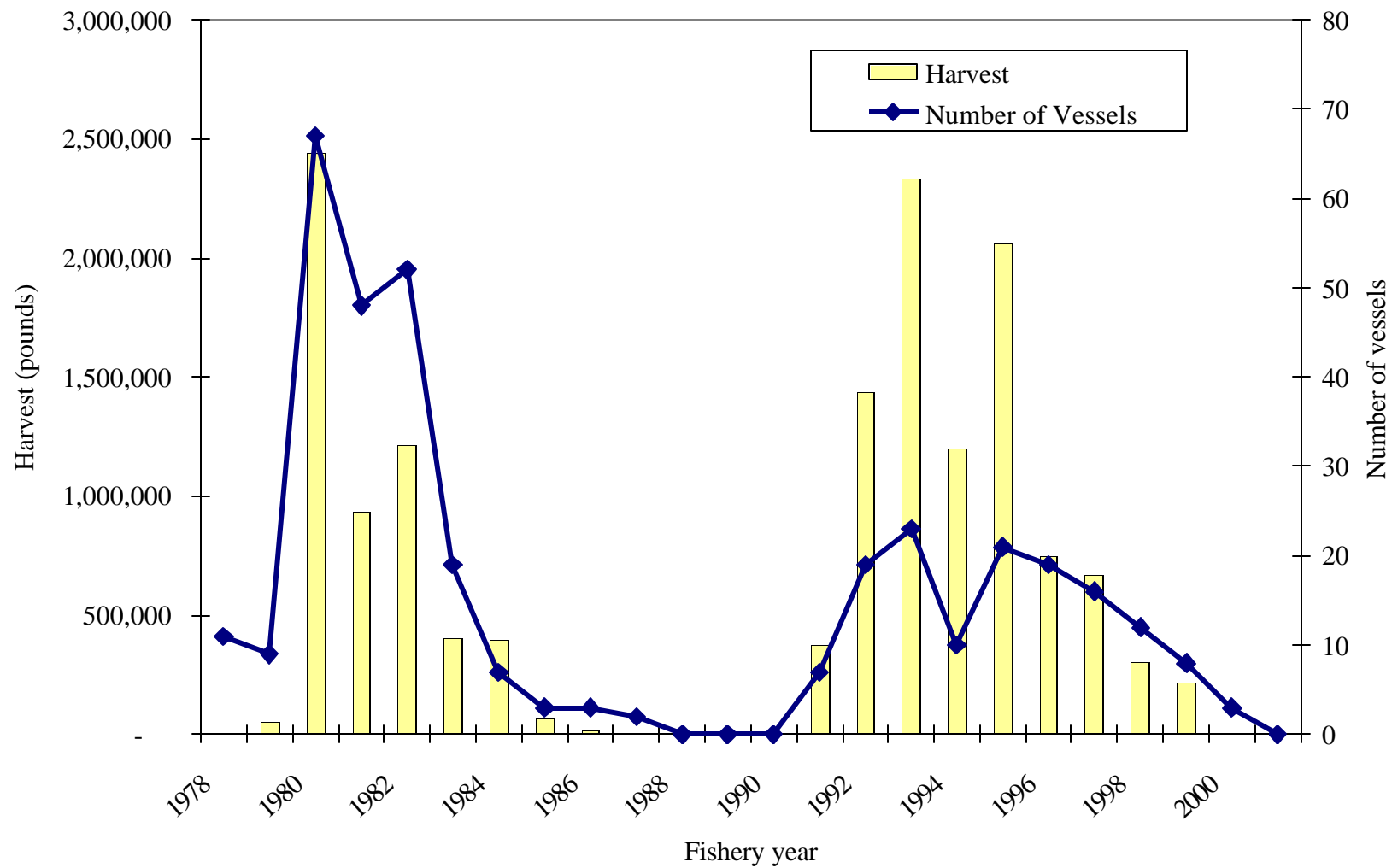


Figure 5-14. Bering Sea hair crab fishery harvest and effort, 1978-2001.

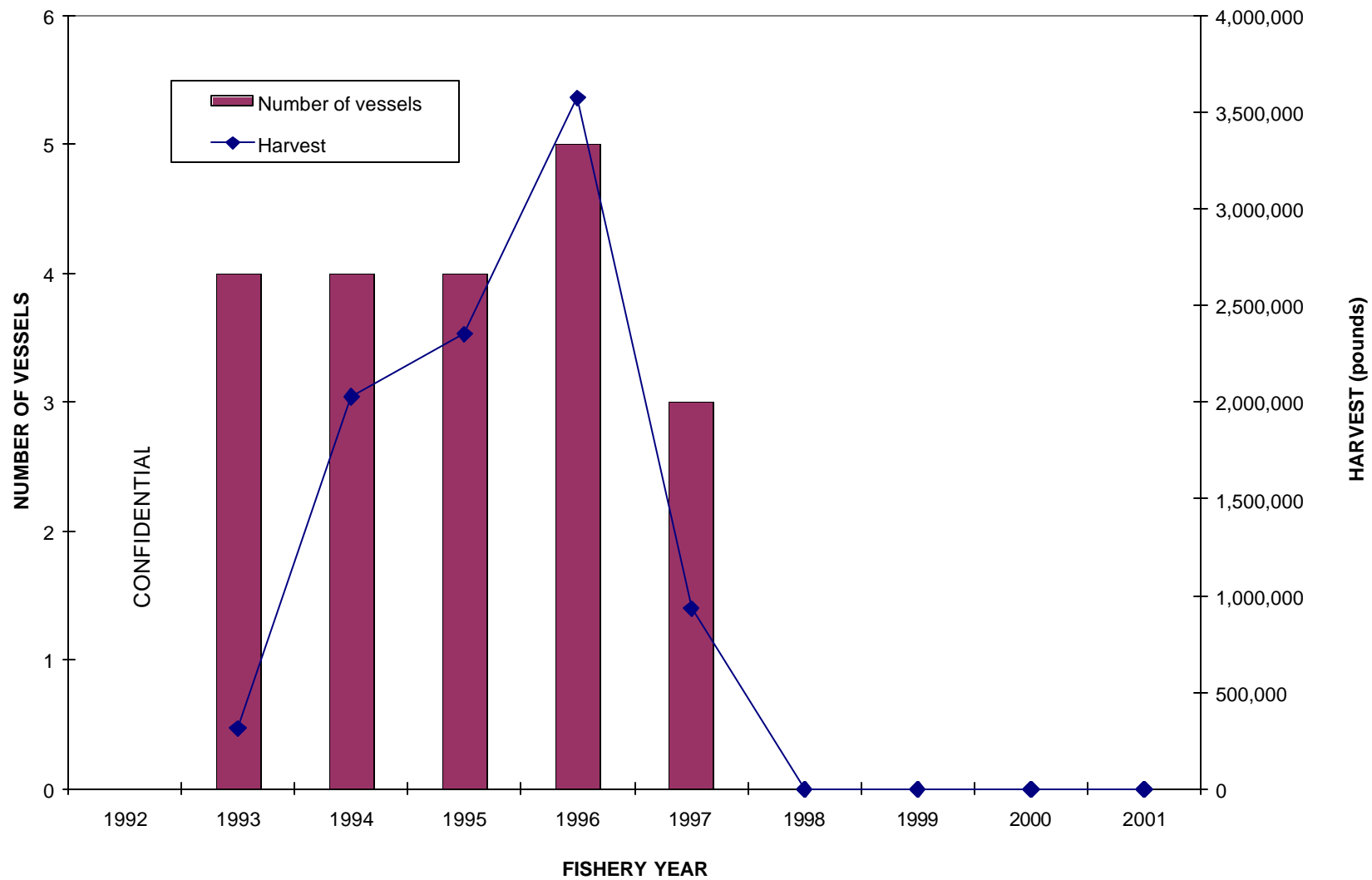


Figure 5-15. Number of vessels and harvest in the Bering Sea snail fishery, 1992-2001.

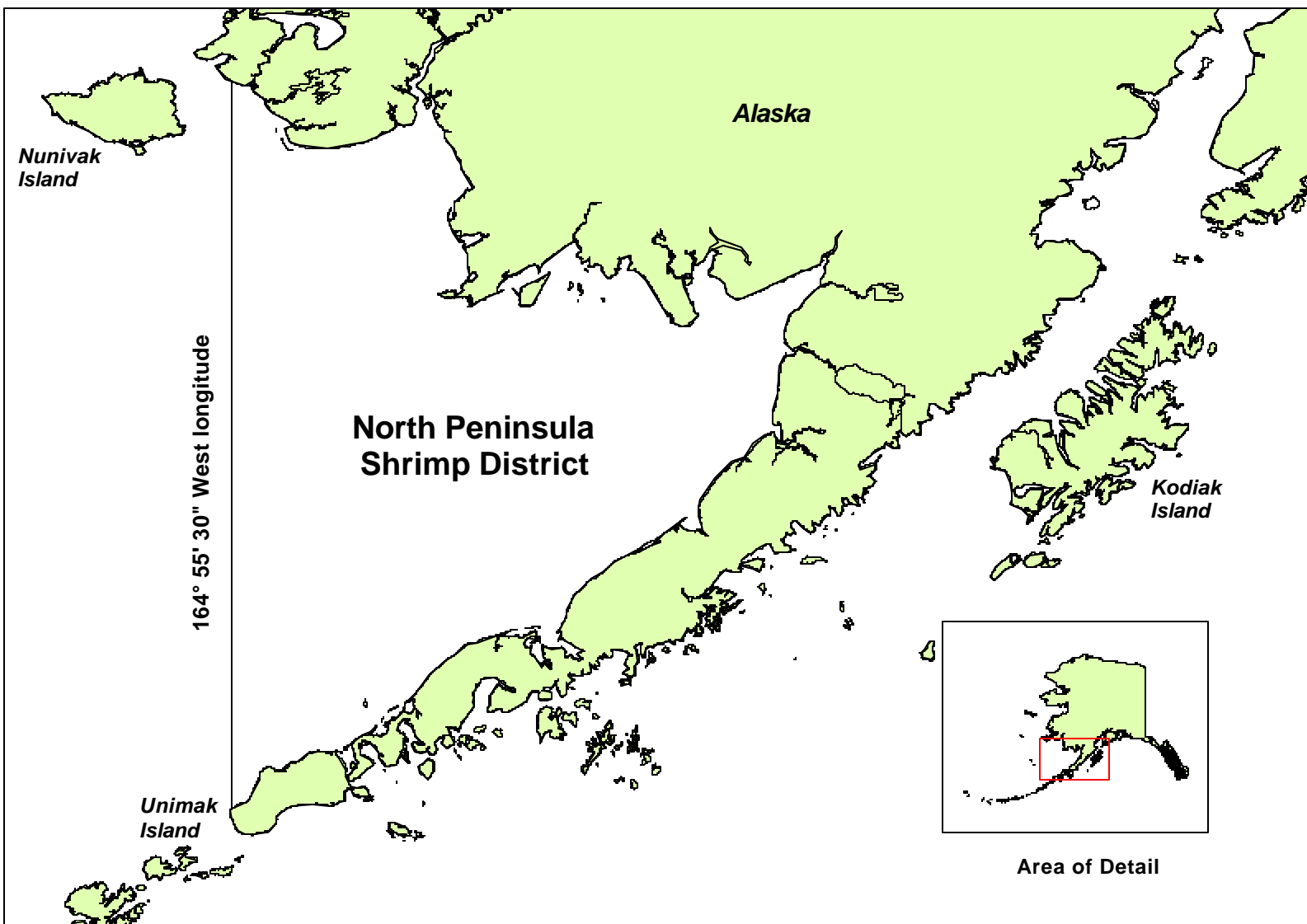


Figure 5-16. The North Peninsula District of Shrimp Registration Area J.

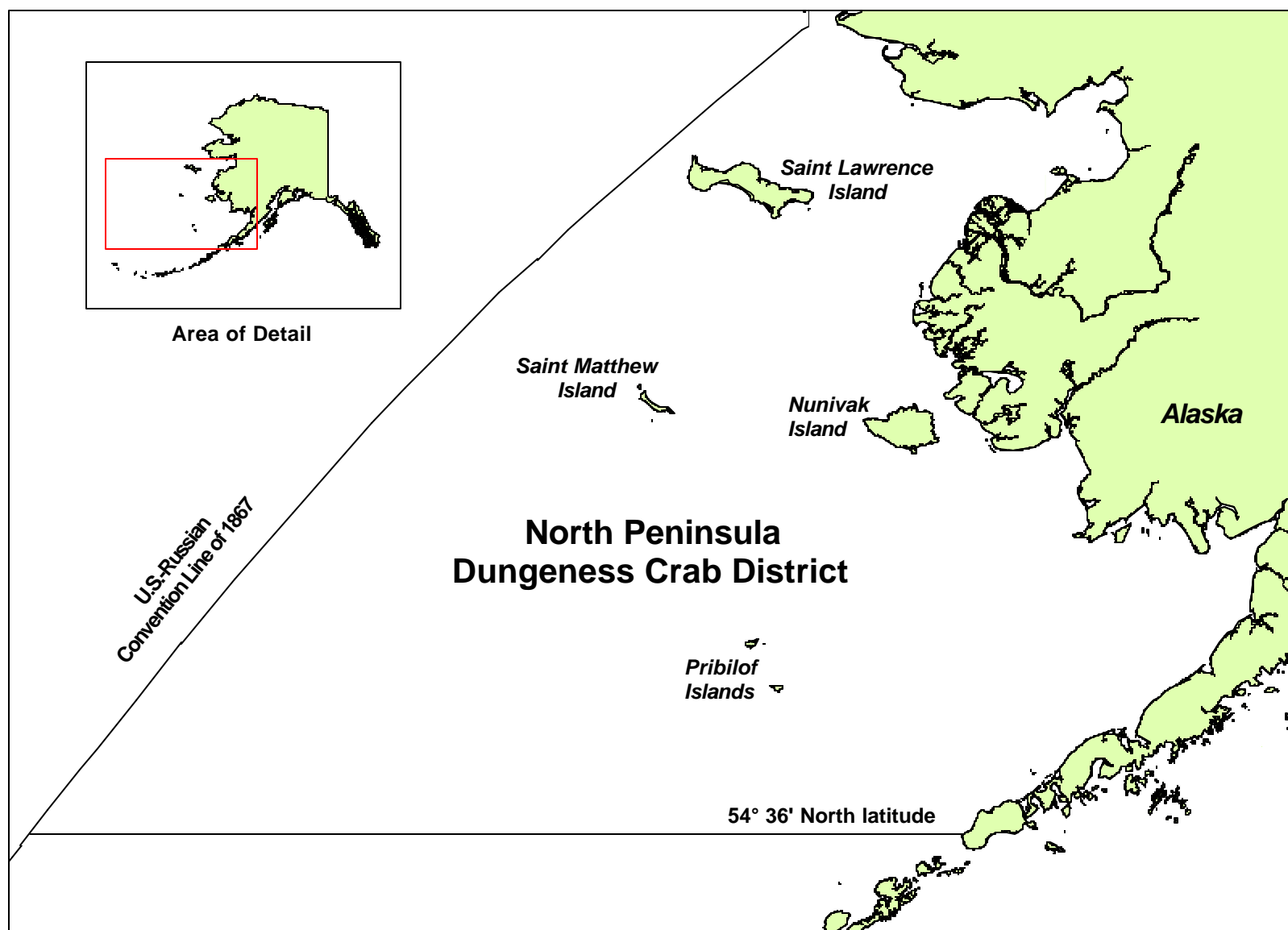


Figure 5-17. North Peninsula District of Dungeness Crab Registration Area J.

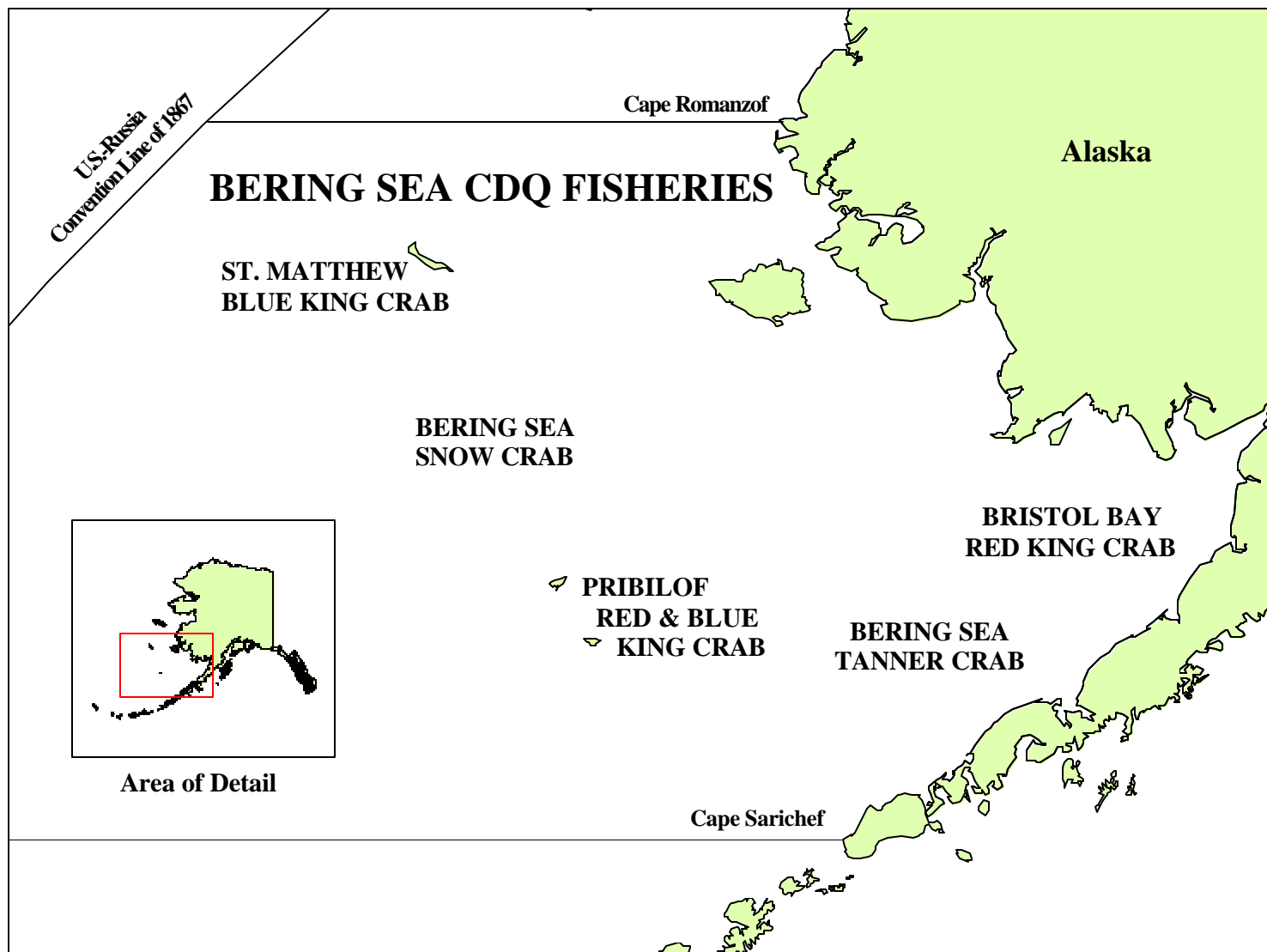


Figure 5-18. Fisheries of the Bering Sea crab Community Development Quota Program managed by the Dutch Harbor staff.

ANNUAL MANAGEMENT REPORT FOR THE WEATHERVANE SCALLOP FISHERIES
OF THE WESTWARD REGION, 2001/02

By

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INTRODUCTION

Alaskan weathervane scallop *Patinopecten caurinus* populations were first evaluated for commercial potential in the early 1950s by both government and private sector research (Kaiser 1986). However, it was not until the late 1960s as catches declined in the U.S. and Canadian scallop fisheries on Georges Bank, that interest in a fishery off Alaska began to take shape (Orensanz 1986). Initial commercial fishing effort took place in 1967 when fishermen on two vessels harvested weathervane scallops from fishing grounds off the eastside of Kodiak Island. By the following year, 19 vessels consisting of New England type scallop vessels, converted Alaskan crab boats, salmon seiners, halibut longliners, and shrimp trawlers entered the fishery (Kaiser 1986). The commercial fishery progressed through several developmental phases. From 1967 through 1973 virgin scallop beds throughout the state were identified and exploited. This was followed by a period of declining scallop harvests from 1974 to the end of the decade. A smaller, more stable fishery followed through the 1980s. By 1993 the fishery again expanded with an influx of scallop boats from the east coast of the United States (Table 6-1). The fishery changed in the 1990s from one characterized by short trips with numerous deliveries each season to one of long trips with few deliveries as the fleet converted from icing to freezing of the product on board the vessel (Barnhart 2000). The average number of deliveries per year between 1990 and 1994 was 133 (Table 6-1). By 1996, all the scallop catcher boats participating in the statewide fishery were converted to catcher-processors that freeze product onboard. Freezing product onboard allowed longer trips without the fear of product spoilage. The fleet averaged 20 deliveries per year between 1996 and 2001 (Table 6-1).

Variable quantities of weathervane scallops are found in patchy distribution along the continental shelf from Southeast Alaska to the Bering Sea and Aleutian Islands. Scallop “beds” are typically elongated shaped and oriented in a north-south direction consistent with prevailing currents parallel to Alaska’s coastline. Major scallop fishing locations in Alaska coastal waters are shown in Figure 6-1. Scallops are typically found at depths of 20–125 fathoms (120 feet to 750 feet), with the majority of the fishing effort occurring between 40 and 60 fathoms (240 feet to 360 feet) (Barnhart and Rosenkranz 2000). Statewide, approximately 200 square nautical miles are fished annually (Barnhart and Rosenkranz 2000). Bottom substrate types inhabited by weathervanes are variable throughout the state and include mud, clay, silt, sand, and pebble. Coral bycatch has not been observed in the scallop fishery. (Barnhart and Rosenkranz 1999).

There are nine scallop fishing registration areas in Alaska (Figure 6-2). Unless otherwise indicated, this report describes Westward Region fisheries within Registration Area J, including scallop registration areas K, M, O, Q, and R.

MANAGEMENT HISTORY

Historic Management Measures

Prior to an influx of boats from the east coast of the U. S. into the Alaska weathervane scallop fishery in the early 1990s, the fishery was open nine months each year without harvest restrictions. However, by 1993 scallop fishery management changed in response to the increased

effort. The fishery was declared to be a high impact and emerging fishery on May 21, 1993 by the Commissioner of the Alaska Department of Fish and Game (ADF&G) and was closed until a conservative management plan could be developed by the department. The resulting interim Alaska Scallop Fishery Management Plan approved by the ADF&G Commissioner and later adopted by the Alaska Board of Fisheries (BOF) included (1) a requirement for 100% onboard observer coverage, (2) regulations that limit efficiency and slow the pace of fishery, (3) regulations that reduce the capture rate of small scallops, and (4) crab bycatch limits. Regulations prohibited the use of mechanical shucking machines and chafing gear, restricted the number and size of dredges, required a minimum ring size, and limited the number of crew members. At the BOF meeting in March 1997, the statewide regulatory season was established as July 1 through February 15, excluding the Cook Inlet Registration Area. Although the season dates were established to protect molting and mating crab they have the added benefit of not disturbing scallops prior to and during their spawning period.

Other regulatory actions also changed the character of the fishery. The fishery was closed from February 1995 to August 1996 in response to an unregulated vessel operating in the EEZ. Effective July 1, 1997 the North Pacific Fishery Management Council (NPFMC) adopted a federal Fishery Management Plan for the Scallop Fishery Off Alaska (FMP). The federal FMP applied to waters of the exclusive economic zone (EEZ) and initiated a moratorium on the entry of new vessels into the fishery. In 1998, Amendment Three to the federal FMP delegated authority to the state of Alaska to manage all aspects of the scallop fishery, except limited access, in federal waters (Barnhart 2000).

CURRENT MANAGEMENT

The scallop fishery, in both state and federal waters, is managed by the ADF&G. Vessels eligible to fish in the EEZ are limited by the NPFMC FMP while vessels in state waters (0-3 nautical miles) are limited by an Alaska legislative moratorium (AS 16.43.906).

The regulatory fishing season is from July 1 through February 15 or until closed by emergency order. Scallop guideline harvest ranges (GHRs) and crab bycatch limits for the 2001/02 season were announced by news release on June 11, 2001. The upper limit of the GHRs in the Westward Region totaled 535,000 pounds.

King and Tanner crab bycatch caps are established for each management area or district based on the most recent crab trawl survey data (with exception of the Bering Sea), and published in a news release approximately one month prior to the opening of the scallop season. Methods used to determine bycatch limits in the groundfish fisheries around Kodiak are applied to the scallop fishery. A bycatch cap of one percent of the surveyed crab population is applied to areas where a directed commercial crab fishery occurred in the most recent season. In areas where the directed commercial crab fishery was closed during the most recent season, a cap of one-half of one percent is applied. Bering Sea crab bycatch caps were determined based on historical bycatch rates in the fishery.

Observer Program

The ADF&G scallop management plan includes mandatory 100% onboard observer coverage. Data collection efforts in the early years of the observer program focused on detailed examination of crab bycatch and collection of baseline data relative to scallop biology. Since that time data collection has evolved and expanded to focus more on scallop biology and stock assessment. Data are collected on crab and halibut bycatch; discarded scallop catch; retained scallop catch; catch composition; scallop meat weight recovery; location, area, and depth fished; and catch per unit effort (CPUE) (Barnhart and Rosenkranz 2000).

Observers report scallop harvest, number and duration of tows, area fished, and crab bycatch to the ADF&G at least three times each week during the season. These data are incorporated into inseason management of the resource.

Industry

The majority of the scallop vessel owners formed a cooperative just prior to the 2000/01 regulatory season. This program is not endorsed or managed by the ADF&G or any federal agency. Within the cooperative, vessel owners allocated themselves shares based on previous fishing history. Some owners opted to remove their boats from the fishery and arranged for their coop shares to be caught by others members of the cooperative. The formation of the cooperative slowed the harvest rate and extended the fishing effort over a longer time period.

Vessel owners within the cooperative have taken an active role in developing measures aimed at reducing crab bycatch. The vessel operators now provide their confidential inseason fishing information to an independent consulting company contracted by the cooperative. The consulting company reviews the crab bycatch data, fishing location information, and scallop harvest. This procedure allows for real time identification of high crab abundance areas. When an area of high crab abundance is identified the fleet is provided with that information and directed to avoid the area.

Vessel operators also voluntarily release their confidential fishing information to the department so that it can be used in this and other reports to help the BOF make informed decisions on management issues in areas where few fishermen participate.

KODIAK REGISTRATION AREA

The Kodiak Registration Area (Area K) includes the waters of the Pacific Ocean south of the latitude of Cape Douglas and east of the longitude of Cape Kumlik (Figure 6-3). The Kodiak Registration Area is comprised of the Northeast, Shelikof, and Semidi Districts. Extensive areas are closed to scallop fishing to protect crab habitat.

Historic Background

When commercial fishing for weathervane scallops began in Alaska, vessel operators targeted fishing grounds along the eastside of Kodiak Island. In 1968, 734,084 pounds of scallop meats were landed from eight vessels (Table 6-2). The Kodiak scallop fishery peaked in 1970 when 1.4 million pounds of scallop meats were landed from seven vessels. Catches declined by the mid-70s with no participation in 1976 or 1978. Since 1980 landings have fluctuated from 46,971 pounds to 689,497 pounds of scallop meats. There was no harvest in 1995 because the season was closed by federal emergency rule.

Concerns about the impact of scallop dredging on crab resources began in 1969 when ADF&G closed the south end of Kodiak Island and Marmot Bay to scallop fishing by emergency order because of king crab *Paralithodes camtschatica* bycatch. Subsequently, the BOF adopted the department's recommendation, closing both areas by regulation. During the early 1970s the regulatory season ending date was changed to March 31 to protect king crabs. In 1990, to protect depressed red king and Tanner crab *Chionoecetes bairdi* populations, the BOF closed scallop fishing in Kodiak's westside bays which had been previously closed to non-pelagic trawling. Crab bycatch limits were initiated in the Kodiak Area with the development of the Alaska Scallop Fishery Management Plan in 1993.

2001/02 Fishery

The 2001/02 scallop fishing season was open July 1, 2001 through January 18, 2002. Four catcher-processors fished in the Kodiak Registration Area. To facilitate distribution of fishing effort and crab bycatch limits, king crab districts as described in 5 AAC 34.405 were utilized.

Northeast District

The Northeast District of the Kodiak Registration Area as applied to the scallop fishery includes all waters northeast of a line extending 180° from the easternmost tip of Cape Barnabas, east of a line from the northernmost tip of Inner Point to the southernmost tip of Afognak Point, east of 152° 30' in Shuyak Strait, and east of the longitude of the northernmost tip of Shuyak Island (152° 20' W. long.) (Figure 6-3).

The GHR for the Northeast District was set at zero to 80,000 pounds of shucked scallop meats. Three catcher-processors participated in the fishery with initial effort in mid-August. Inseason observer reports indicated that approximately 23,000 Tanner crabs and no red king crabs were caught from a bycatch limit of 425,000 Tanner crabs and 15 red king crabs. Observer reports also indicated that the upper end of the GHR was achieved, prompting an emergency order closing the Northeast District to scallop fishing on January 18, 2002. Final fish tickets summaries totaled 80,470 pounds of shucked meats (Table 6-3).

Average scallop shell height (SH) from the retained catch increased from 135 mm in the 2000/01 season to 140 mm in the 2001/02 season, which is similar to the average SHs in the 1990s (Table 6-3). The average SH has increased each season since 1998/99. Scallop CPUE, expressed as round weight of retained scallops per dredge-hour (lb/drg-hr), increased from a low of 220

lb/drg-hr in 1994/95 to a high of 720 lb/drg-hr in the 2001/2002 season. Figure 6-4 shows the estimated SH distributions of the retained and discarded scallop catch based on resampling the discarded and retained SH measurements in equal proportion. There appears to be continued recruitment to the Northeast District scallop population based on the estimate frequency of scallops <110 mm SH in the size distribution (Figure 6-4). A summary of the scallop catch in pounds of whole scallops and shucked scallop meats, dredge hours, and CPUE expressed in pounds of shucked scallop meats per dredge-hour (lb shucked/drg-hr) from 1993 through 2001 is depicted in Figure 6-5. The fishery in this district is characterized by decreasing effort (dredge hours) and increasing fishery performance (CPUE) between 1993 and 2001. Between 1999 and 2001 the department allowed the annual harvest to reach the upper limit of the GHR, set at 80,000 pounds of shucked meats.

Shelikof District

The Shelikof District of the Kodiak Registration Area includes all waters north of a line from the westernmost tip of Cape Ikolik to the southernmost tip of Cape Kilokak, west of a line from the northernmost tip of Inner Point to the southernmost tip of Afognak Point, west of 152° 30' W. long. in Shuyak Strait, and west of the longitude of the northernmost tip of Shuyak Island (152° 20' W. long.) (Figure 6-3).

The GHR for the Shelikof District was set at zero to 180,000 pounds of shucked meats. Four catcher-processors participated in the fishery with initial effort on July 1 when the season opened. Inseason observer reports showed that approximately 29,000 Tanner crabs and no red king crabs were caught from a bycatch limit of 59,000 Tanner crabs and 50 red king crabs. Inseason observer reports also indicated that the upper end of the GHR was achieved prompting an emergency order closing the Shelikof District to scallop fishing on December 8, 2001. Final fish ticket summaries totaled 179,202 pounds of shucked meats (Table 6-3).

The Shelikof District has been a very consistent producer over time. Fishery performance, as measured by CPUE (lb/drg-hr), has been relatively stable between 1996 and 2001. However, CPUE decreased slightly from 608 pounds (the highest level since the observer program began), to 539 pounds between the 2000/01 and 2001/02 seasons. Average scallop SH increased from 134 mm to 140 mm between the 2000/01 and 2001/02 seasons (Table 6-3). A range of scallop sizes supports the fishery and there appears to be continued recruitment to the population as evidenced by the frequency of scallops <110 mm SH in the size distribution (Figure 6-6). Figure 6-7 summarizes the scallop catch in pounds of whole scallops and shucked scallop meats, dredge hours, and CPUE (lb shucked/drg-hr) in the Shelikof District from 1993 through 2001.

Semidi District

The Semidi District of the Kodiak Registration Area includes all Pacific Ocean waters west of the longitude of Cape Kilokak and east of the longitude of Cape Kumlik (Figure 6-3). No guideline harvest range has been developed for this district.

State waters of the Semidi District were closed to scallop dredging by the BOF at the March 2000 meeting however, federal waters remain open. No fishing activity occurred in the Semidi

District during the 2001/02 fishing season, although it was open from July 1, 2001 to February 15, 2002.

ALASKA PENINSULA REGISTRATION AREA

The Alaska Peninsula Registration Area (Area M) includes waters of the Pacific Ocean west of the longitude of Cape Kumlik and east of the longitude of Scotch Cap Light (Figure 6-8).

Areas closed to fishing include all state waters and offshore waters of Unimak Bight and around Mitrofanina Island. The Unimak closure was adopted in the early 1970s to protect king crab habitat. The Mitrofanina Island closure was adopted in the mid-1980s to protect Tanner crab populations.

Historic Background

Historic fishing effort for scallops in the Alaska Peninsula Registration Area has been sporadic. Most catch and effort information prior to 1993 is confidential because few fishermen participated in any given year. However, the average annual harvest during the nine years of participation prior to 1993 was 41,888 pound of scallop meats. The highest harvest was in 1982 when 205,691 pounds of shucked meats were landed from six vessels. (Table 6-4).

2001/02 Fishery

The Alaska Peninsula Registration Area did not open to scallop fishing for the 2001/02 season. It remained closed to preserve the remaining scallop resource and allow for stock recovery. The department does not intend to reopen the Alaska Peninsula Registration Area until the 2003/04 season.

BERING SEA REGISTRATION AREA

The Bering Sea Registration Area (Area Q) includes waters of the Bering Sea north of a line extending from the latitude of Cape Sarichef at 54° 36' N lat. to 171 W. long, north to 55° 30' and west to the U.S. - Russia Convention Line of 1867 (Figure 6-9). Waters closed to scallop fishing have been established to protect king crab stocks and juvenile Pacific halibut nursery areas.

Historic Background

ADF&G records indicate that scallops were first harvested from the Bering Sea in 1987, and then again in 1990 and 1991 (Table 6-5). During those years few fishermen participated in any given

year, so catch and effort information is confidential. However, the average annual catch for the three confidential years was 68,189 pounds of shucked meats. No additional landings were made from this area until 1993 when 613,813 pounds of scallop meats were landed from ten vessels. During the 1994/95 fishery, 505,439 pounds of shucked meats were landed from eight vessels. The 1995/96 fishery was closed by federal emergency rule. Between 1996/97 and 1999/00 scallop catches were restrained by Tanner or Snow crab bycatch limits, averaging 127,000 pounds of shucked meats per year. In the 2000/01 season the upper limit of the GHR, 205,520 pounds of shucked meats, was landed from three vessels. This was the first season since 1994 that the scallop harvest reached the upper limit of the GHR without being restrained by crab bycatch limits.

2001/02 Fishery

The GHR for the Bering Sea Registration Area was set at zero to 200,000 pounds of shucked meats. Crab bycatch limits were established at 65,000 *Chionoecetes bairdi* Tanner crabs, 300,000 *Chionoecetes opilio* and hybrid Tanner crabs, and 500 king crabs. Three catcher-processors participated in the Bering Sea fishery with initial effort on July 1 when the season opened. The 2001/02 fishery closed by emergency order on October 31, 2001 largely due to poor fishery performance, with a harvest of 140,871 pounds of scallop meats. Projections based on inseason observer reports indicated a bycatch of 48,000 Tanner crabs and 67,000 *C. opilio* and hybrid Tanner crabs.

Shell height data suggest little recruitment to the fishery (Figure 6-10). Average SH was nearly the same between the 2000/01 and 2001/02 seasons and CPUE declined from 708 lb/drg-hour, which was the highest catch rate in the Bering Sea since inception of the observer program, to 554 lb/drg-hour (Table 6-3). During the previous season, 2000/01, there was a slight rise in CPUE at the beginning with a steady decline throughout the season. CPUE at the start of the 2001/02 season was nearly the same level as that at the end of the 2000/01 season. Figure 6-11 summarizes the scallop harvest in pounds of both whole scallops and shucked scallop meats, dredge hours, and CPUE (lb shucked/drg-hr) in the Bering Sea Registration Area from 1993 through 2001.

Preliminary carbon isotope analysis suggests scallops in the Bering Sea mature one year later than those in the Gulf of Alaska (Carpenter 2000). This indicates a more conservative management approach may be appropriate for the Bering Sea Registration Area.

DUTCH HARBOR REGISTRATION AREA

The Dutch Harbor Registration Area (Area O) includes Aleutian Island waters west of the longitude of Scotch Cap Light, east of 171°W. long., and south of the latitude of Cape Sarichef (Figure 6-12).

Historic Background

In the Dutch Harbor Registration Area closed waters were established in 1986 to protect crab nursery areas (Figure 6-12). Through the 1993 season, the Registration Area was open year-round to scallop dredging. At the BOF meeting in March 1994 the regulatory season dates were established as July 1 through February 15.

The first harvest of weathervane scallops from the Dutch Harbor Registration Area took place in 1982 when 62,105 pounds of scallop meats were landed from five vessels (Table 6-6). The average annual catch from 1985 through 1992 was 203,695 pounds of scallop meats. In the 1993/94 season, 39,346 pounds of scallop meats were landed from three vessels. During the 1994/95 season, 1,931 pounds of scallop meats were landed from three vessels. Scallop fishing was limited to state waters during the 1995/96 season because federal waters were closed by federal emergency rule. Catch and effort information is confidential because only one vessel participated in the fishery. The scallop catch increased to 5,790 pounds in the 1997/98 season and to 46,432 pounds during the 1998/99 season. The harvest dropped during the 1999/2000 season to 6,465 pounds of shucked meats and was closed by emergency order to prevent localized depletion.

2001/02 Fishery

The Dutch Harbor Registration Area did not open to scallop fishing for the 2001/02 season. The area remains closed to preserve the remaining scallop resource and to allow for recovery of the stock. The department does not intend to reopen the Dutch Harbor Registration Area until the 2002/03 season.

ADAK REGISTRATION AREA

The Adak Registration Area (Area R) includes Aleutian Island and Bering Sea waters west of 171°W. long. and east of the U.S. – Russian Convention Line of 1867 and south of 55° 30' N. lat. (Figure 6-13).

Historic Background

ADF&G records indicate that scallops were first harvested from the Adak Registration Area in 1979, and then again in 1992, and 1995. During those years few fishermen participated in any given year, so catch and effort information is confidential. Little is known about the scallop population in the area. The continental shelf adjacent to the Aleutian Islands is narrow, providing limited weathervane scallop habitat.

The Petrel Bank, between 51°30' N lat. and 54° 30' N lat., west of 179° W long. and east of 179° E long. was closed by emergency order on March 21, 1991 due to concerns about king crab bycatch in the *Chlamys* (pink scallop) fishery. On November 1, 1991, before the initial

emergency order expired, a second emergency order was issued closing this area until June 1, 1994, providing time for the department to bring the conservation concerns to the attention of the BOF. In 1993, the BOF adopted the department's recommendation closing the area by regulation (Figure 6-13).

2001/02 Fishery

The 2001/02 fishery opened July 1, 2001 and closed by regulation on February 15, 2002. A GHR of zero to 75,000 pounds was announced by news release. No vessels participated in the fishery during 2001/02 season.

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Table 6-1. Historic statewide commercial weathervane scallop catch, number of vessels, and number of landings, excluding Cook Inlet, 1967-2001.

Year	Number Vessels	Number Landings ^a	Commercial Catch ^b
1967	2	6	778 ^c
1968	19	125	1,677,268
1969	19	157	1,849,947
1970	7	137	1,440,338
1971	5	60	931,151
1972	5	65	1,167,034
1973	5	45	1,109,405
1974	3	29	504,438
1975	4	56	435,672
1976		Confidential	
1977		Confidential	
1978		No Fishery	
1979		Confidential	
1980	8	56	616,717 ^c
1981	18	101	924,441
1982	13	120	913,996
1983	5	30	192,310
1984	6	52	383,512
1985	7	47	615,564
1986	8	74	667,258
1987	4	54	599,947 ^d
1988	4	47	341,070
1989	7	55	534,763
1990	9	144	1,473,535
1991	6	139	1,136,649
1992	7	133	1,741,578
1993	13	144	1,510,563
1994/95	15	104	1,240,775
1995/96	10	29	410,743 ^d
1996/97	4	19	704,196
1997/98	6	24	783,703
1998/99	8	23	818,064
1999/00	8	18	817,559
2000/01	7	15	730,101
2001/02	4	20	554,831

^a Prior to and including 1995, number of landings is equal to the number of fish tickets. After 1995, number of landings is equal to number of deliveries. A delivery typically includes multiple tickets.

^b Pounds of shucked scallop meats.

^c Unshucked scallop deliveries were converted to shucked meats using a 10% conversion factor.

^d Includes illegal harvest.

Table 6-2. Historic commercial catch, effort, and value of weathervane scallops,
Kodiak Registration Area, 1967 through 2001/02.

Year	Number Vessels	Number Landings ^a	Commercial Catch (pounds) ^b	Average Landing (pounds) ^b	Average Price/Lb.	Est. Value Exvessel (dollars)	Number Tows
1967 ^f	2	6	778	130	0.70	545	-
1968 ^c	8	89	734,084	8,248	0.85	623,971	-
1969	11	86	1,012,860	11,777	0.85	861,000	-
1970	7	102	1,417,612	13,898	1.00	1,500,000	-
1971	5	48	841,211	17,525	1.05	883,000	-
1972	5	68	1,038,793	15,276	1.15	1,200,000	-
1973	4	42	935,705	22,279	1.20	1,123,000	-
1974	3	14	147,945	10,568	1.30	192,000	-
1975	3	29	294,142	10,143	1.40	412,000	-
1976	1	6	75,245	12,541	1.59	119,000	-
1977	0	0	0	0	0	0	-
1978	0	0	0	0	0	0	-
1979			Confidential				
1980 ^f	7	33	355,200	10,763	3.60	1,278,720	-
1981	15	62	439,804	7,094	4.00	1,759,216	-
1982	8	62	435,645	7,026	3.25	1,416,000	-
1983	4	24	147,747	6,156	5.00	739,000	-
1984	7	37	309,502	8,365	4.00	1,238,000	-
1985	3	10	46,971	4,697	4.00	188,000	-
1986	5	21	180,600	8,600	4.25	767,550	-
1987	3	25	253,451	10,138	3.45	874,406	-
1988	3	21	195,811	9,324	3.68	720,584	-
1989	5	29	242,557	8,364	3.87	938,696	-
1990	7	73	689,497	9,445	3.43	2,364,974	10,950
1991	4	61	514,348	8,432	3.82	1,964,809	12,884
1992	3	44	389,854	8,860	3.96	1,543,822	8,328
1993 ^{d,e}	4	16	88,279	5,517	5.15	454,637	1,708
1993/94	10	48	318,361	6,633	5.15	1,639,559	7,060
1994/95	10	32	355,628	11,113	5.79	2,052,543	6,449
1995/96			Season Closed				
1996/97	4	13	268,545	20,657	6.30	1,691,833	2,760
1997/98	5	14	360,339	25,739	6.50	2,342,203	4,757
1998/99	8	12	301,600	25,133	6.40	1,930,240	3,515
1999/00	6	9	266,012	29,557	6.25	1,662,575	2,673
2000/01	5	7	260,052	37,150	5.50	1,430,286	1,989
2001/02	4	8	259,672	32,459	5.25	1,363,278	2,439

^a Prior to 1995/96, number of landings is equal to the number of fish tickets. After 1995/96, number of landings is equal to number of deliveries (off-loads containing Kodiak scallops).

^b Pounds of shucked scallop meats.

^c Unshucked scallop deliveries were converted to shucked meats using a 10% conversion factor.

^d January 1 - June 30 time period.

^e Includes harvest from exploratory fishery.

Table 6-3. Commercial harvest, average shell height from retained catch, and catch per unit effort from observer data, Westward Region, 1993/94 through 2001/02.

REGISTRATION AREA/DISTRICT																		
Year	Kodiak Area									Alaska Peninsula			Bering Sea			Dutch Harbor		
	Northeast District			Shelikof District			Semidi District											
	Harvest ^a	SH ^b	CPUE ^c	Harvest ^a	SH ^b	CPUE ^c	Harvest ^a	SH ^b	CPUE ^c	Harvest ^a	SH ^b	CPUE ^c	Harvest ^a	SH ^b	CPUE ^c	Harvest ^a	SH ^b	CPUE ^c
1993/94	155,187	144	319	105,017	128	467	58,157	145	319	112,087	119	575	284,414	146	598	38,731	128	517
1994/95	35,517	151	220	313,741	131	404	d	153	d	65,282	127	372	505,439	147	535	1,931	158	291
1995/96	season closed			season closed			season closed			season closed			season closed			d	134	d
1996/97	11,430	144	253	219,305	136	537	37,810	154	283	12,560	126	398	150,295	147	619	no reported effort		
1997/98	95,858	140	439	258,346	139	565	6,315	147	176	51,616	135	374	97,002	151	482	5,790	127	326
1998/99	120,010	127	497	179,870	137	522	15,806	151	149	63,290	128	383	96,795	147	514	46,432	128	417
1999/00	77,119	131	689	187,963	130	442	930	152	253	75,535	124	386	164,929	145	562	6,465	134	249
2000/01	79,965	135	619	180,087	134	608	no reported effort			7,660	119	299	205,520	142	708	season closed		
2001/02	80,470	140	720	179,202	140	539	no reported effort			season closed			140,871	141	554	season closed		

^a Harvest in pounds of shucked meats.

^a Scallop shell heights (SH) in mm.

^c Catch per unit effort (CPUE) is equal to pounds (round weight) of retained scallops per dredge-hour.

^d Confidential.

Table 6-4. Historic commercial catch, effort and value of weathervane scallops, Alaska Peninsula Registration Area, 1975 through 2001/02.

Year	Number Vessels	Number Landings ^a	Commercial Catch (pounds) ^b	Average Landing (pounds) ^b	Average Price/Lb	Est. Value Exvessel (dollars)	Number Tows
1975				Confidential			
1976				No Fishing			
1977				No Fishing			
1978				No Fishing			
1979				No Fishing			
1980				No Fishing			
1981				Confidential			
1982	6	20	205,691	10,284	3.35	689,064	-
1983				Confidential			
1984				No Fishing			
1985				Confidential			
1986				No Fishing			
1987				Confidential			
1988				Confidential			
1989				No Fishing			
1990				Confidential			
1991				Confidential			
1992				No Fishing			
1993 ^c				Confidential			
1993/94	6	7	112,087	16,012	5.15	577,248	928
1994/95	7	11	65,282	5,935	5.79	377,983	1,006
1995/96				Closed			
1996/97	2 ^d	2	12,560	6,280	6.30	79,128	185
1997/98	3	6	51,616	8,603	6.50	335,504	1,054
1998/99	4	4	63,290	15,822	6.40	405,056	684
1999/00	5	5	75,535	15,107	6.25	472,094	1,107
2000/01	3	3	7,660	2,553	5.50	42,130	189
2001/02				Closed			

^a Prior to 1995/96, number of landings is equal to the number of fish tickets. After 1995/96, number of landings is equal to number of deliveries (off-loads) containing Alaska Peninsula scallops.

^b Pounds of shucked scallop meats.

^c January 1-June 30 time period.

^d Vessel operators released confidential data.

Table 6-5. Historic commercial catch, effort and value of weathervane scallops, Bering Sea Registration Area, 1987 through 2001/02.

Year	Number Vessels	Number Landings ^a	Commercial Catch (pounds) ^b	Average Landing (pounds) ^b	Average Price/Lb	Est. Value Exvessel (dollars)	Number Tows
1987			Confidential				
1988			No Reported Catch				
1989			No Reported Catch				
1990			Confidential				
1991			Confidential				
1992			No Reported Catch				
1993 ^c	6	23	329,399	14,322	5.22	1,719,463	3,792
1993/94	9	16	284,414	17,776	5.22	1,484,641	3,578
1994/95	8	29	505,439	17,429	6.00	3,032,634	6,619
1995/96			Season Closed				
1996/97	1 ^d	2	150,295	75,147	NA	NA	952
1997/98	2 ^d	5	97,002	19,400	7.05	683,864	1,276
1998/99	4	4	96,795	24,198	6.30	609,808	1,175
1999/00	2	4	164,929	41,232	6.25	1,030,806	1,736
2000/01	3	4	205,520	51,380	5.50	1,130,360	1,608
2001/02	3	5	140,871	28,174	5.25	739,572	1,406

^a Prior to 1995/96, number of landings is equal to number of fish tickets. After 1995/96, number of landings is equal to number of deliveries (off-loads) containing Bering Sea scallops.

^b Pounds of shucked scallop meats.

^c January 1- June 30.

^d Vessel operators released confidential data.

Table 6-6. Historic commercial catch, effort, and value of weathervane scallops, Dutch Harbor Registration Area, 1982 through 2001/02.

Year	Number Vessels	Number Landings ^a	Commercial Catch (pounds) ^b	Average Landings (pounds) ^b	Average Price/Lb.	Est. Value Exvessel (dollars)	Number Tows
1982	5	8	62,105	7,763	3.11	193,147	NA
1983			No Reported Catch				
1984			No Reported Catch				
1985			Confidential				
1986	5	37	406,642	10,990	3.50	1,423,247	8,752
1987			Confidential				
1988			Confidential				
1989			Confidential				
1990			Confidential				
1991			Confidential				
1992			Confidential				
1993/94	3	6	39,346	6,558	NA		572
1994/95	3	3	1,931	644	NA		52
1995/96			Confidential/State Water Only				
1996/97			No Reported Fishing				
1997/98	1 ^c	1	5,790	5,790	7.05	40,819	105
1998/99	4	5	46,432	9,286	6.30	295,522	479
1999/00	1 ^c	1	6,465	6,465	6.25	40,500	167
2000/01			Season closed				
2001/02			Season closed				

^a Prior to 1995/96, number of landings is equal to number of fish tickets. After 1995/96, number of landings is equal to number of deliveries (off-loads) containing Dutch Harbor scallops.

^b Pounds of shucked scallop meats.

^c Vessel operator released confidential data.

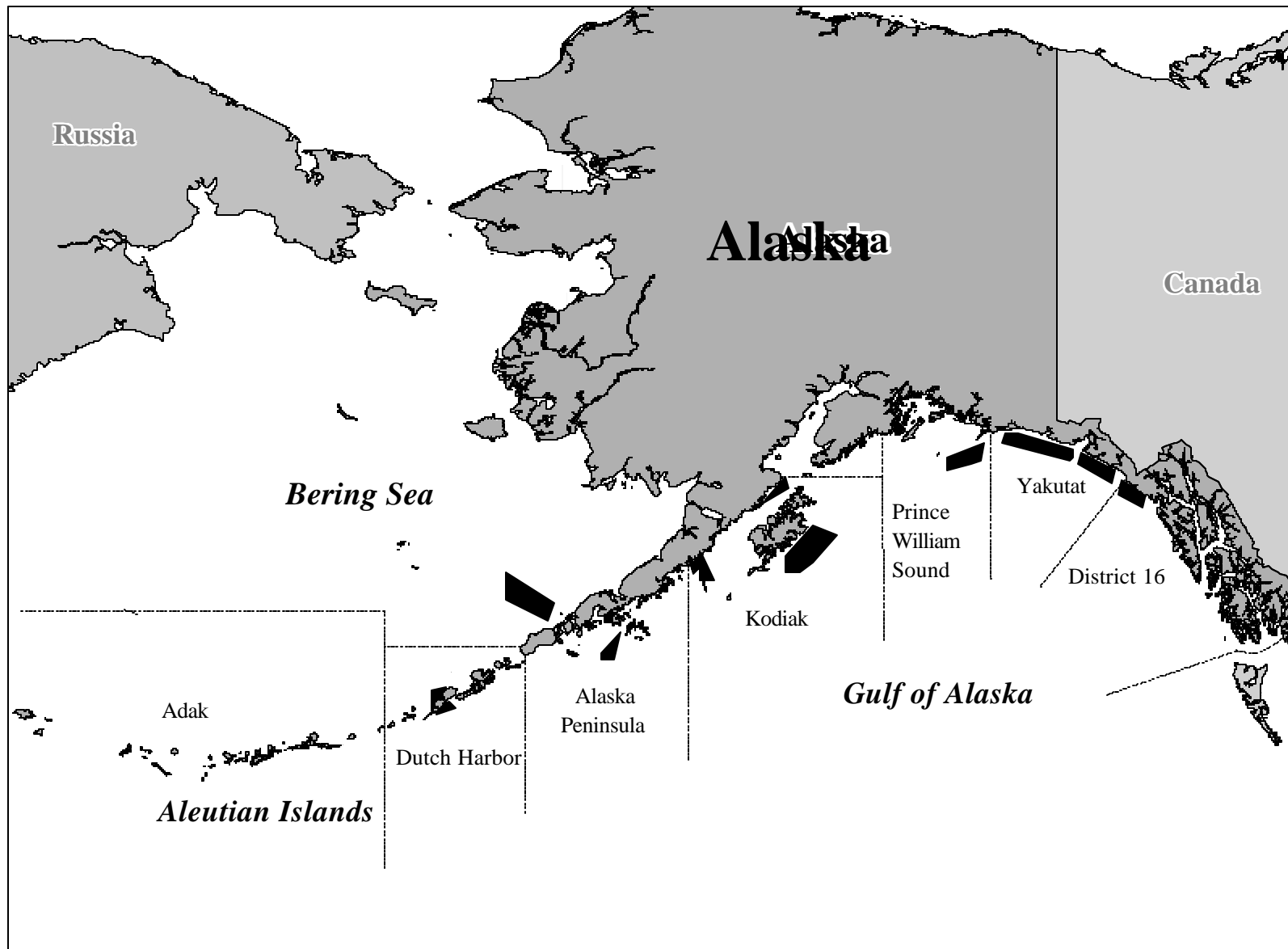


Figure 6-1. Major weathervane scallop fishing locations in coastal waters of Alaska.

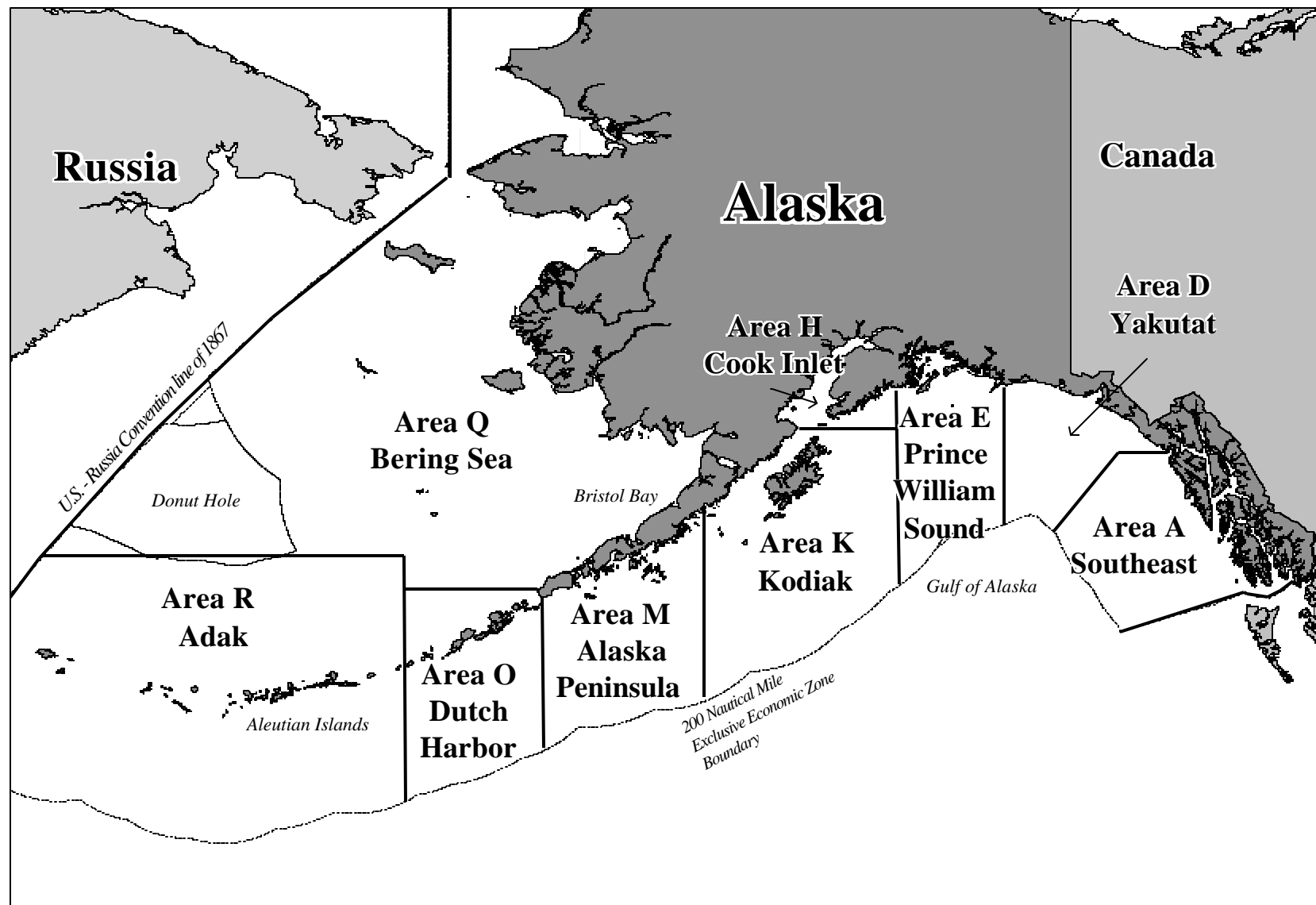


Figure 6-2. State of Alaska weathervane scallop fishing registration areas.

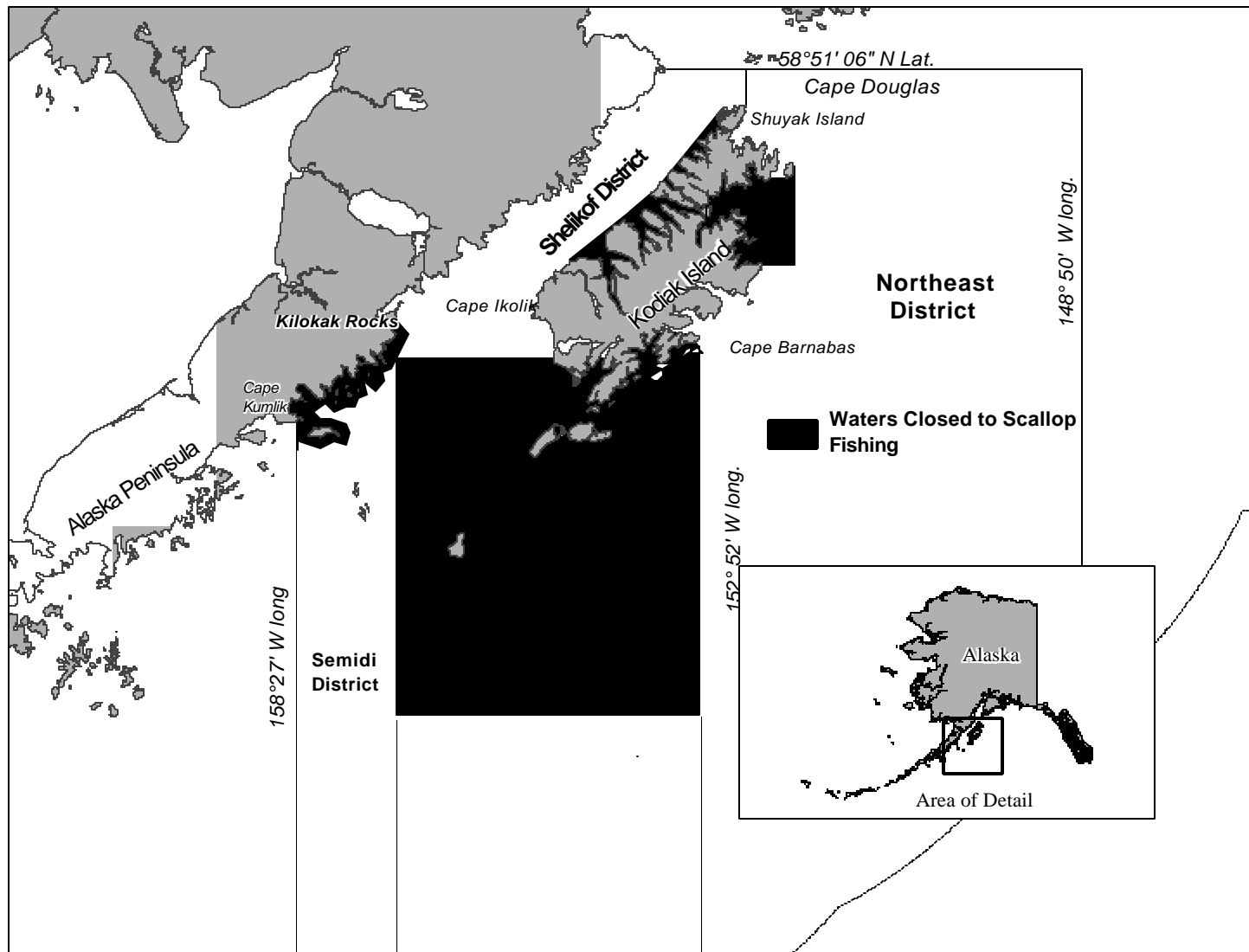


Figure 6-3. Kodiak weathervane scallop fishing registration area and closed waters.

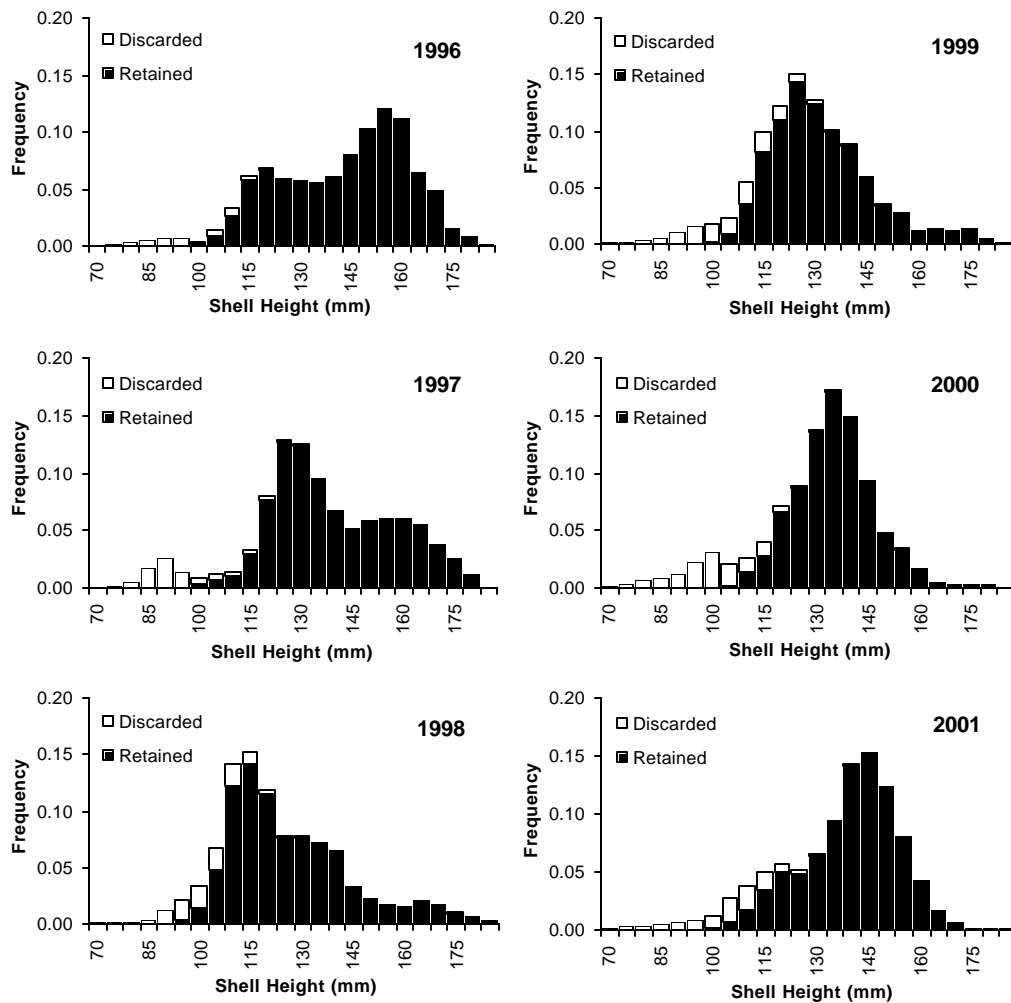


Figure 6-4. Estimated shell height distribution of scallops caught in the Northeast District, Kodiak Registration Area, 1996 through 2001.

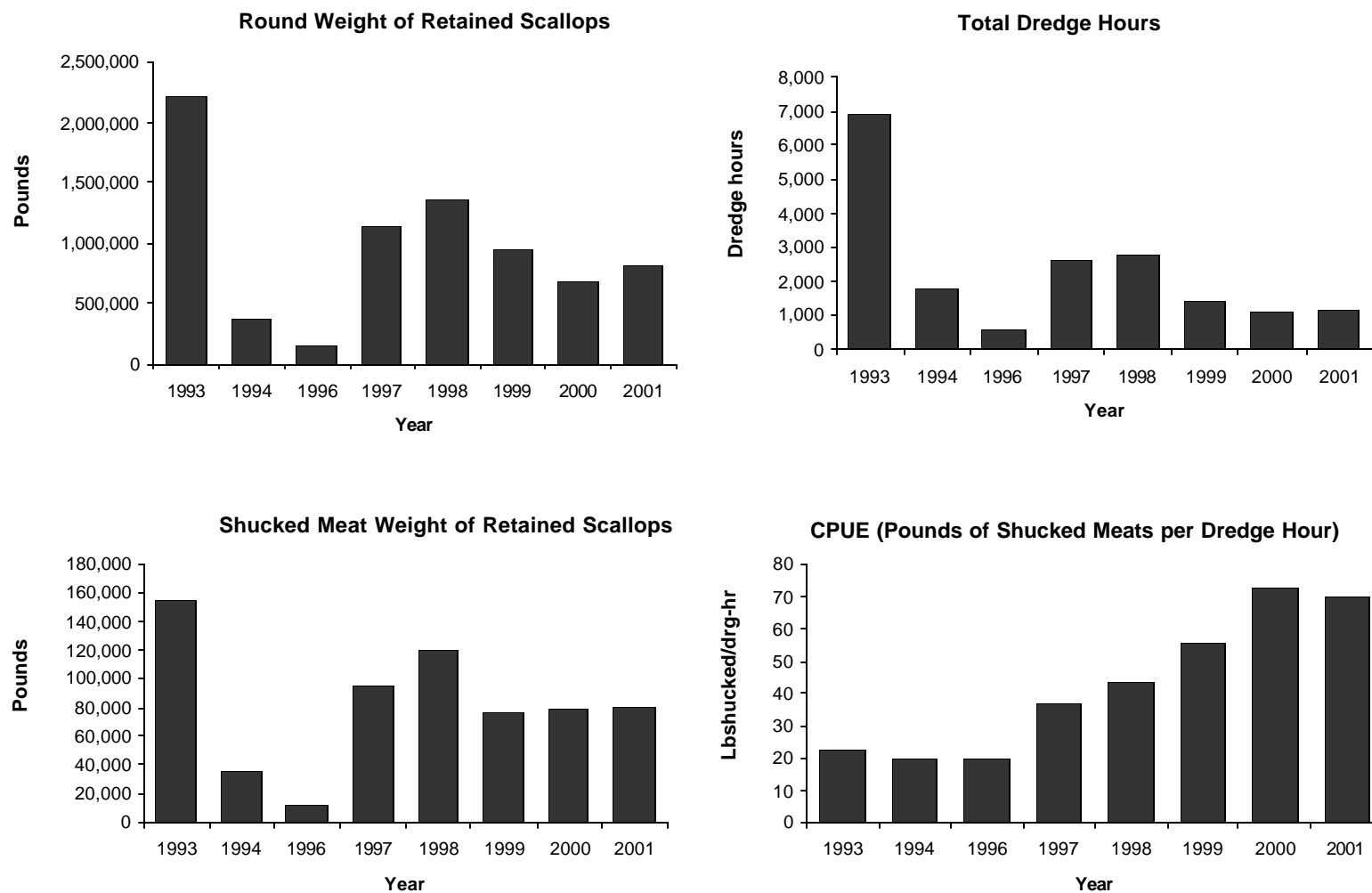


Figure 6-5. Weathervane scallop harvest by round weight, shucked meat weight, dredge hours, and CPUE, Northeast District, Kodiak Registration Area, 1993 through 2001.

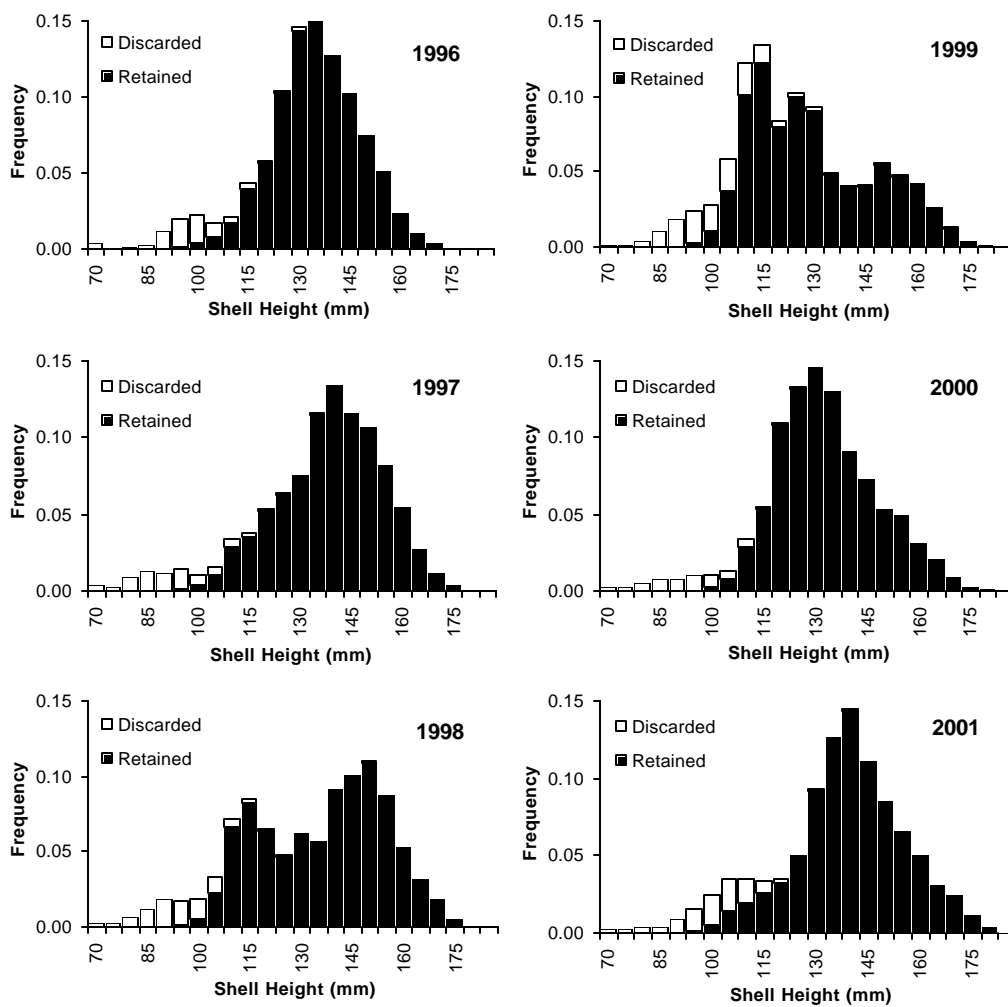


Figure 6-6. Estimated shell height distribution of scallops caught in the Shelikof District, Kodiak Registration Area, 1996 through 2001.

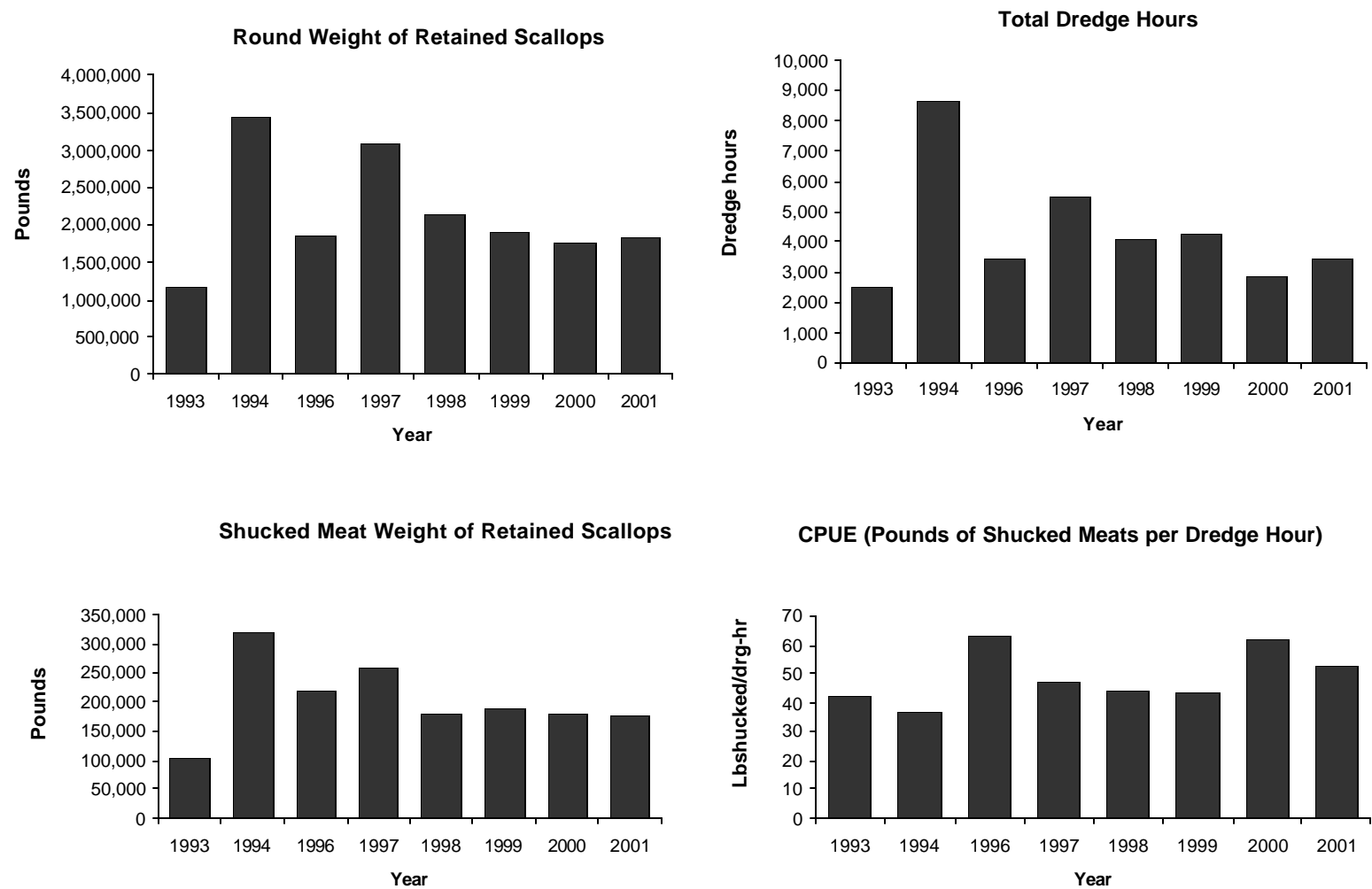


Figure 6-7. Weathervane scallop harvest by round weight, shucked meat weight, dredge hours, and CPUE, Shelikof District, Kodiak Registration Area, 1993 through 2001.

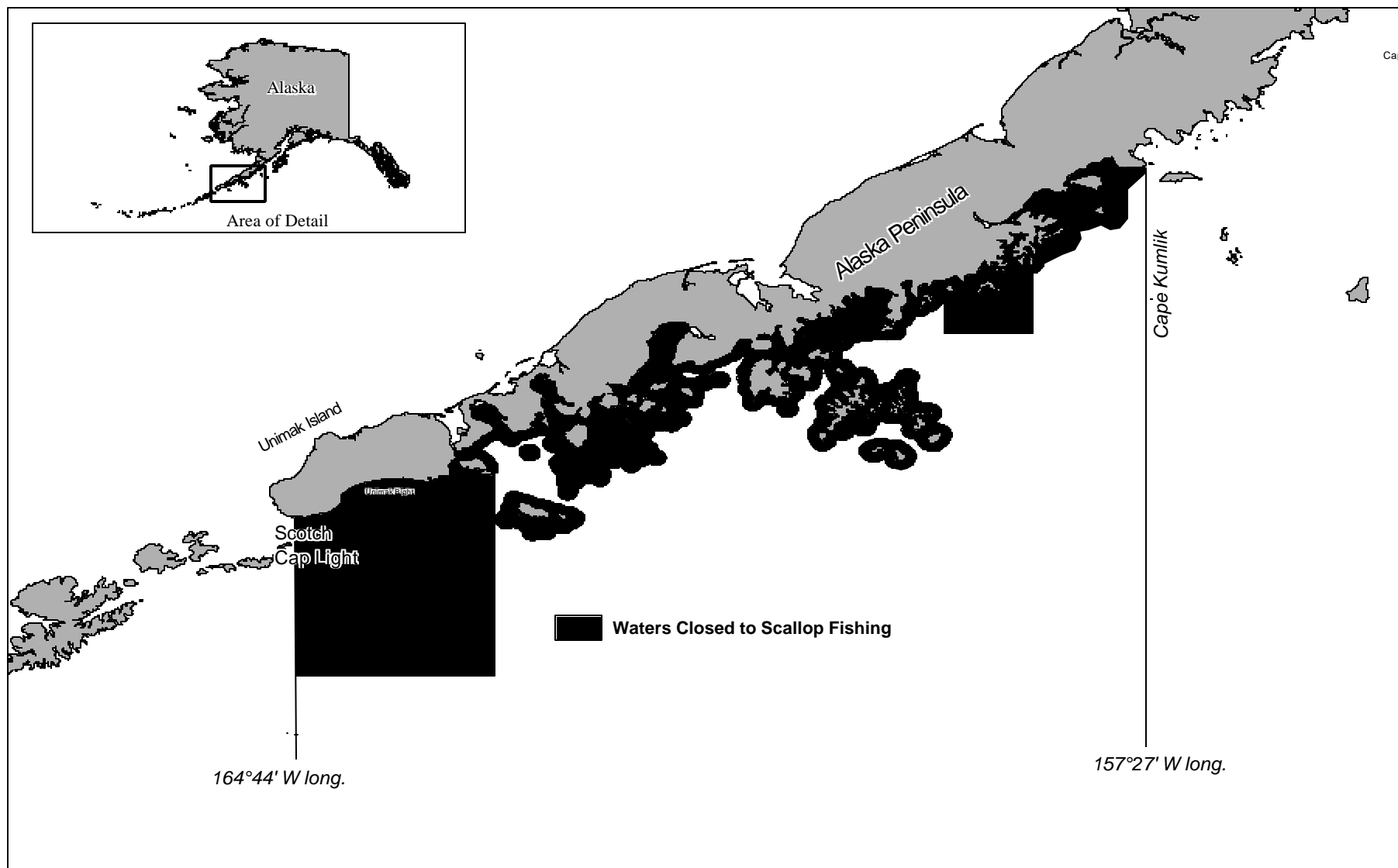


Figure 6-8. Alaska Peninsula weathervane scallop fishing registration area and closed waters.

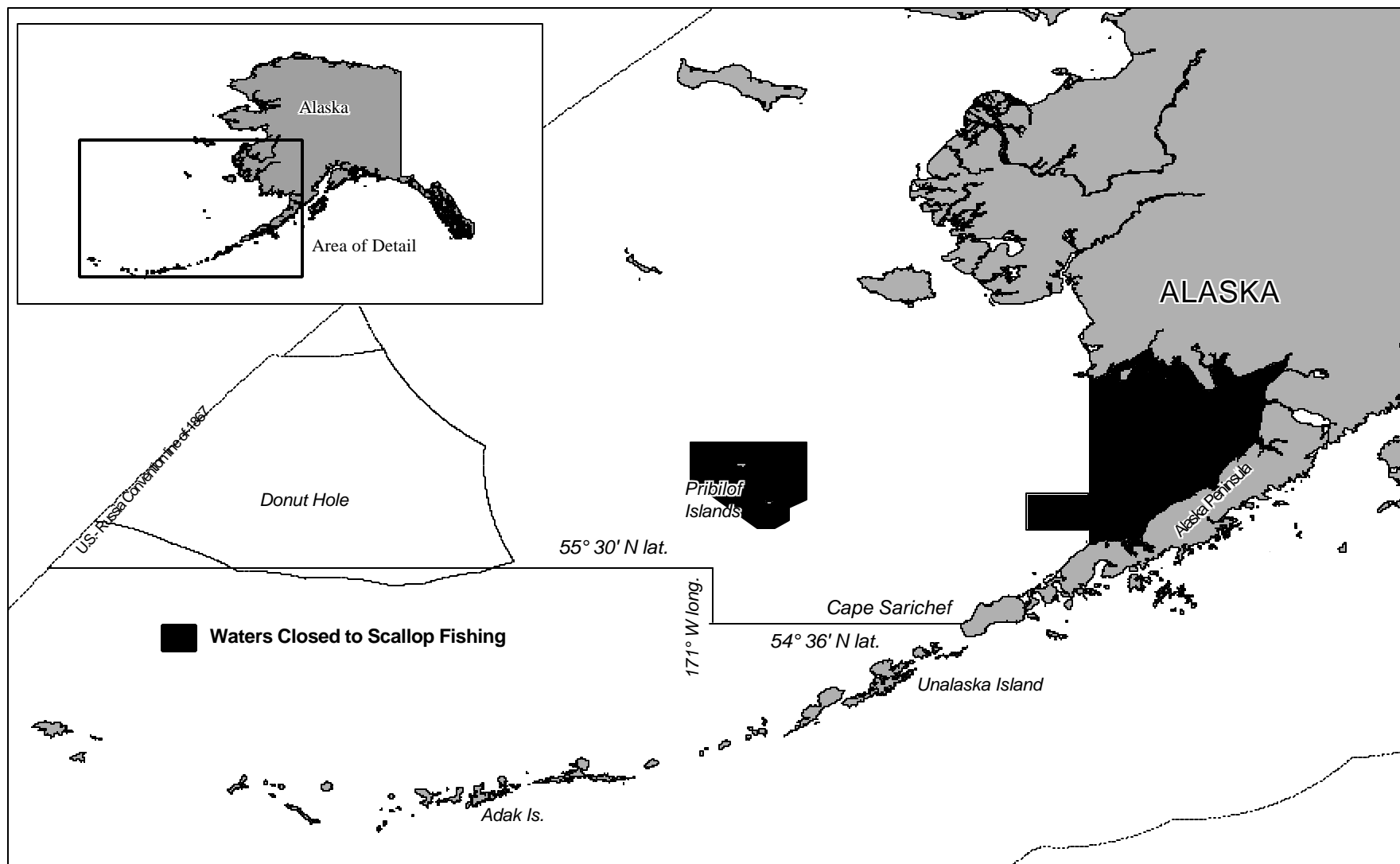


Figure 6-9. Bering Sea weathervane scallop fishing registration area and closed waters.

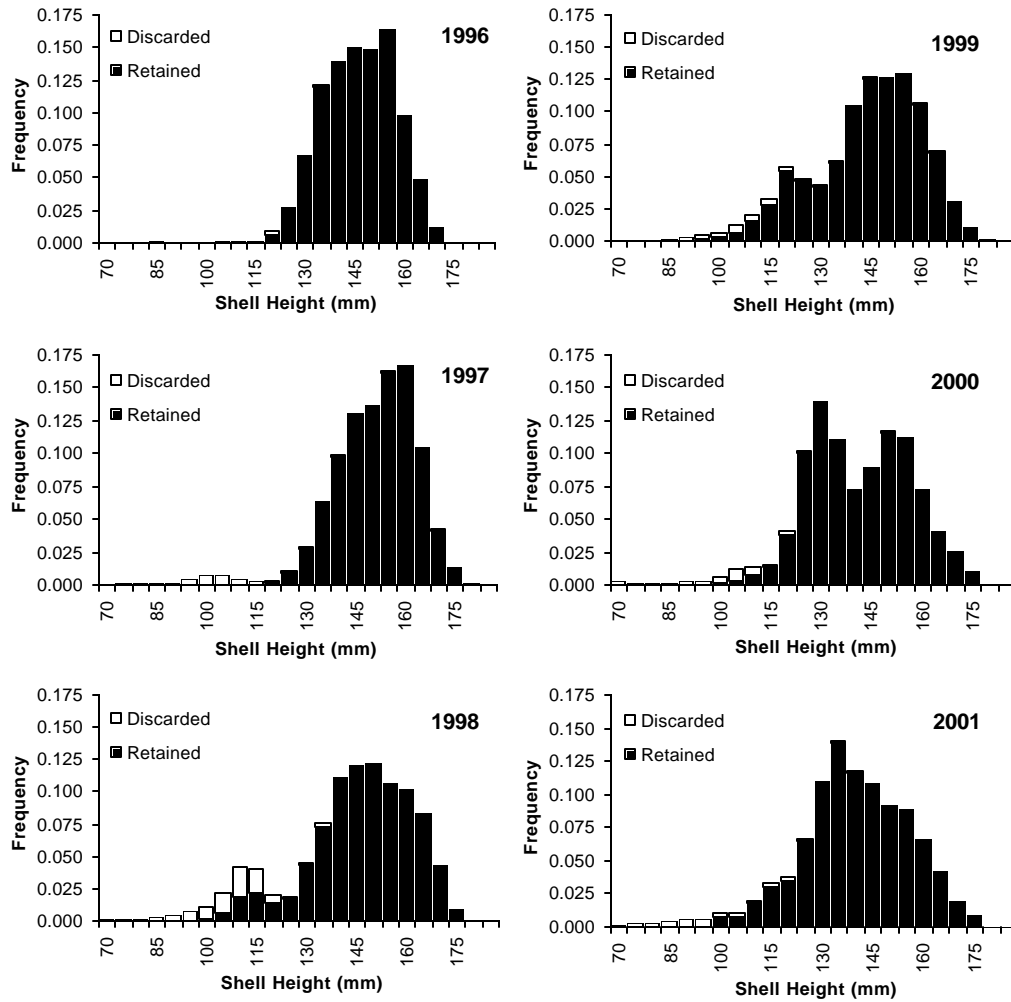


Figure 6-10. Estimated shell height distribution of scallops caught in the Bering Sea Registration Area, 1996 through 2001.

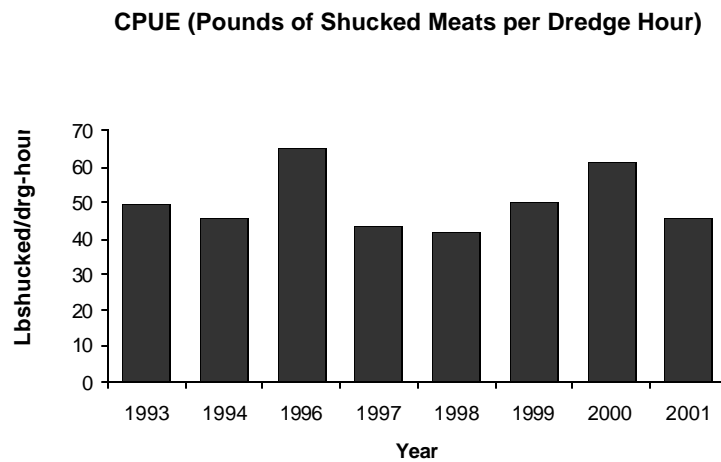
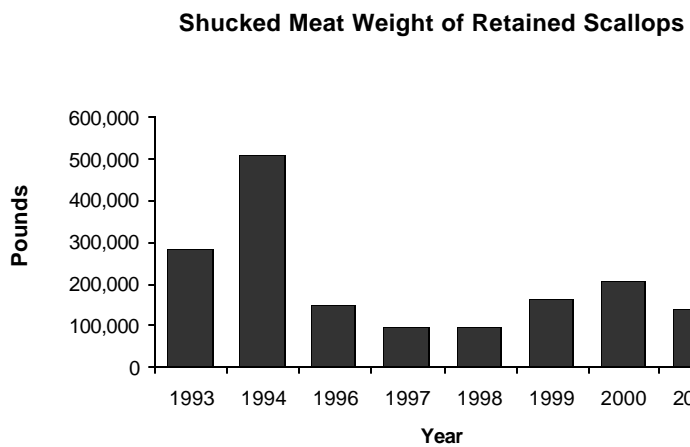
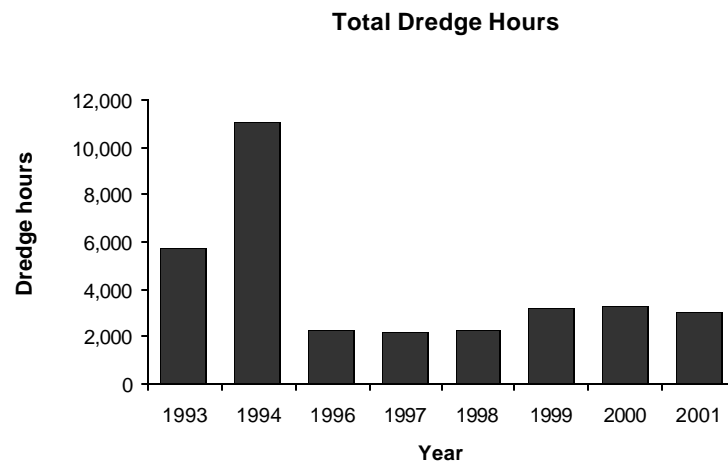
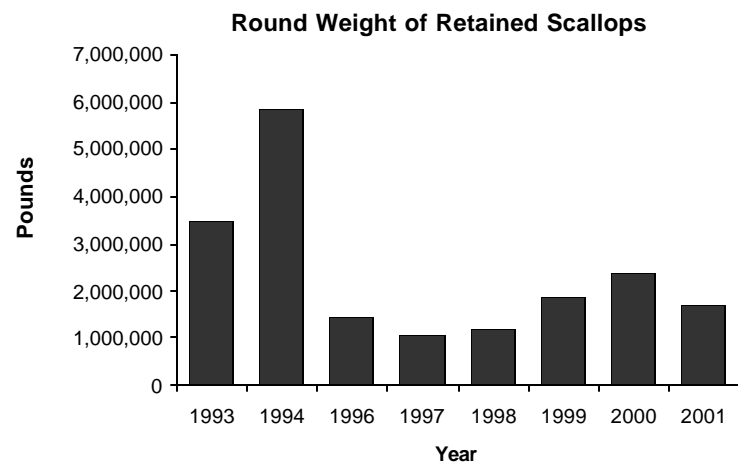


Figure 6-11. Weathervane scallop harvest by round weight, shucked meat weight, dredge hours, and CPUE, Bering Sea Registration Area, 1993 through 2001.

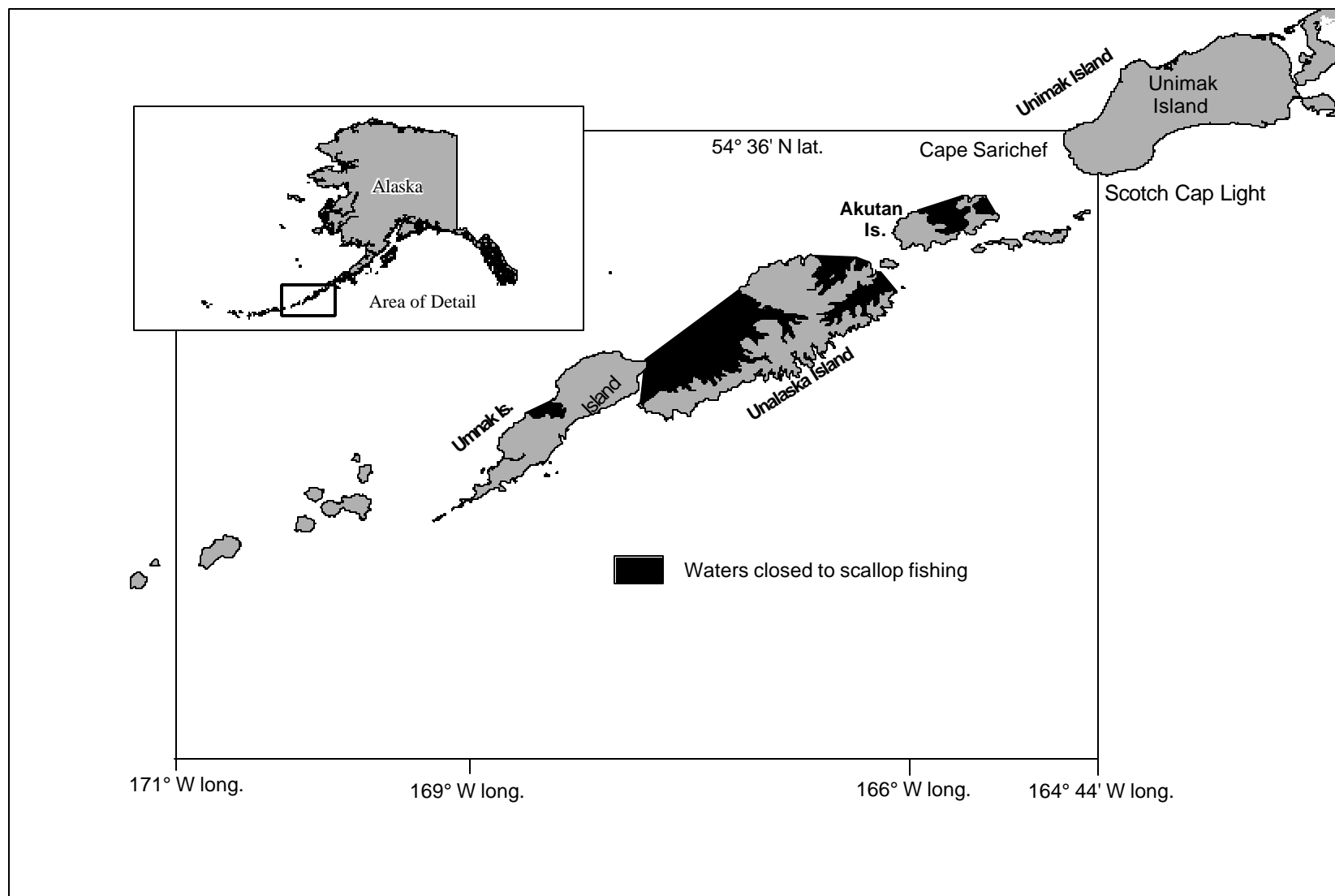


Figure 6-12. Dutch Harbor weathervane scallop fishing registration area and closed waters.

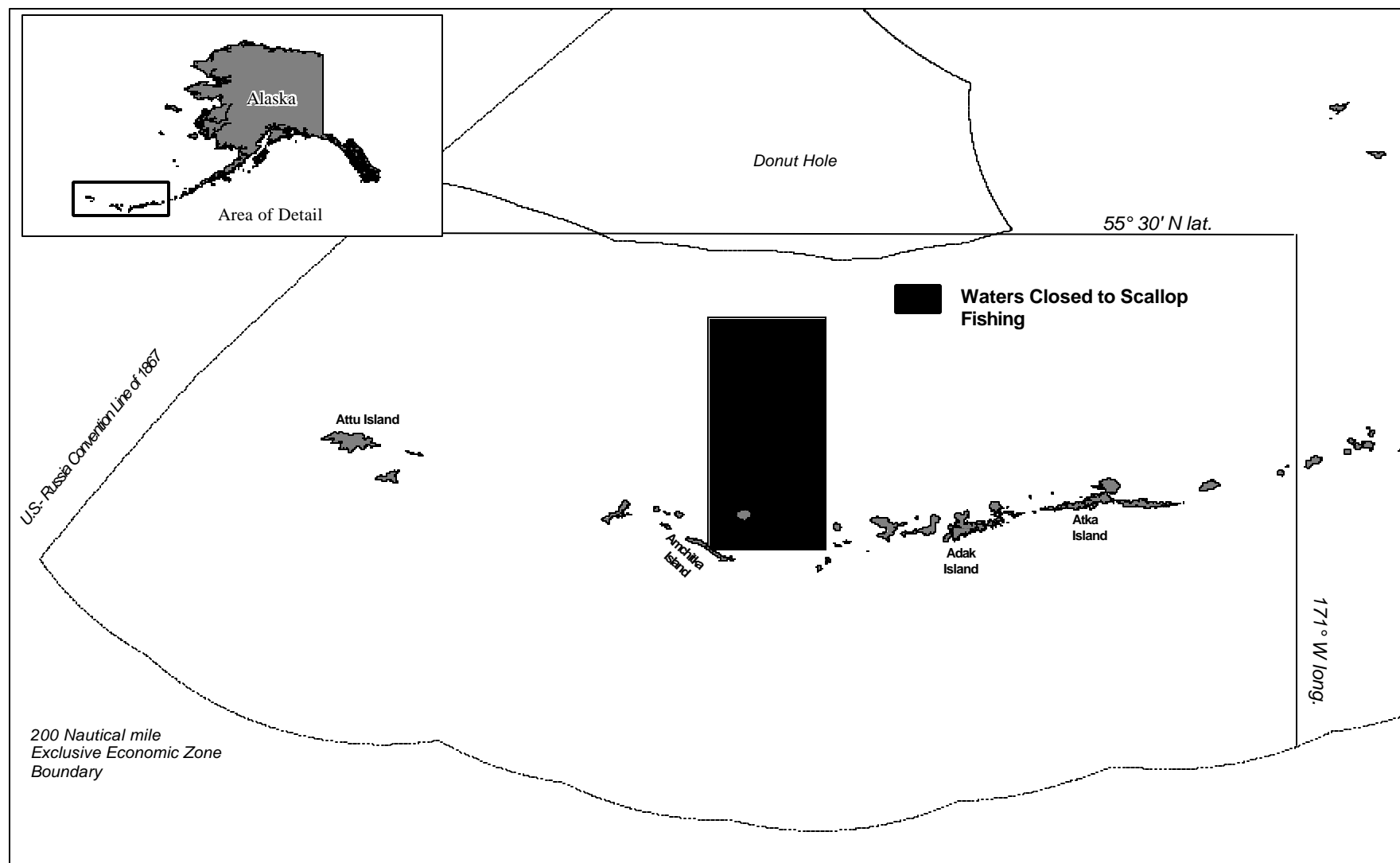


Figure 6-13. Adak weathervane scallop fishery registration area and closed waters.

STATE OF ALASKA
MANDATORY SHELLFISH ONBOARD OBSERVER PROGRAM

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ABSTRACT

The Alaska Department of Fish and Game (ADF&G) has managed crab observer activities in the Bering Sea/Aleutian Islands (BSAI) since 1988 and statewide scallop observer activities since 1993.

Shellfish observers collect biological and fishery-based data to assist ADF&G in fishery management. Onboard observers provide the only practical data gathering mechanism for the operation of BSAI crab and statewide scallop fisheries without unduly disrupting the operation of these fisheries.

Varying levels of observer coverage are required for all BSAI shellfish fisheries. During 2001 observers collected data while deployed on catcher processors (C/P), floating processors (F/P), catcher vessels (C/V), and scallop catcher processors. Depending on the fishery, the cost of observer coverage is either the responsibility of the fishing or processing vessel or funded through ADF&G test-fishery cost recovery funds.

Prior to deployment on a vessel both crab and scallop observer candidates are required to attend an ADF&G certified training program and pass the examination with a score requiring at least 90% proficiency.

INTRODUCTION

Data collection and fishery monitoring by onboard observers is an integral component of fisheries management. The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) of 1996 states in Findings (8) “The collection of reliable data is essential to the effective conservation, management, and scientific understanding of the fishery resources of the United States” (U.S. Department of Commerce, 1996).

The State of Alaska Shellfish Onboard Observer Program has evolved to help meet the MSFCMA National Standards. ADF&G commercial shellfish fishing regulation 5 AAC 39.645. SHELLFISH ONBOARD OBSERVER PROGRAM state; that onboard observers are the only practical data-gathering mechanism for the operation of the Bering Sea and Aleutian Islands crab fisheries (BSAI) without unduly disrupting the operation of these fisheries.

This report summarizes the activities of the department’s crab and scallop observer program for calendar year 2001.

HISTORY OF OBSERVER PROGRAMS

Crab Observer Program

In April 1988, the Alaska Board of Fisheries (BOF) adopted regulations requiring onboard observers on all vessels that process king and Tanner crabs *Chionoecetes bairdi* within the BSAI management areas. The observer requirement was prompted by information collected by ADF&G, which suggested illegal processing of undersized and female crabs by catcher-processors (C/Ps) was occurring. Processor reports showed consistently higher production rates by catcher-processors C/Ps compared to catcher-only vessels (C/V). These regulations resulted in creation of the Shellfish Onboard Observer Program. At inception, the primary program goals were to monitor compliance of sex and size regulations of retained crabs and collect data for inseason management of BSAI fisheries. The first observer deployments occurred in September 1988 during the Bristol Bay red king crab *Paralithodes camtschaticus* fishery.

In the spring of 1990, the BOF broadened observer coverage to include vessels processing snow crabs *Chionoecetes opilio*. This change was considered necessary based on reports of undersized Tanner crabs processed and labeled as snow crabs. The BOF also defined observer qualification standards, observer and observer company conflict of interest guidelines, and observer duties and responsibilities. In the fall of 1991, the BOF adopted observer certification and decertification standards.

Additional changes were made to the observer program from 1993 to 1997. In 1993, the requirement to carry shellfish observers as a condition of the permit on all vessels fishing for hair crabs *Erimacrus isenbeckii* in the Bering Sea was enacted. Regulations implemented in 1994 require, as a condition of

the fishing permit, 100% observer coverage on all vessels targeting grooved Tanner crabs *Chionoecetes tanneri*, triangle Tanner crabs *Chionoecetes angulatus*, scarlet king crabs *Lithodes couesi*, and cherry crabs *Paralomis multispina*. Regulations requiring shellfish observers on all vessels fishing for king crabs in the Aleutian Islands Registration Area were enacted in 1995. Separate certifications for crab and scallop observers were put into regulation in 1997.

Miscellaneous fisheries such as those that target grooved Tanner crab and scarlet king crab are quite often small emerging fisheries where an observer is required as a condition of the Commissioner's fishing permit. Many of these permit fisheries have targeted previously unexploited shellfish stocks where little or no data is available to facilitate proper management. Some of the miscellaneous fisheries occur in sensitive habitat utilized by juvenile stages of commercially important species. Management and research of these fisheries rely almost completely on observer-collected data to determine the impacts of fishing activities conducted in these areas.

An amendment to the MSFCMA provided for the development and implementation of a Community Development Quota (CDQ) program for crab fisheries occurring in the Bering Sea. The CDQ amendment was incorporated into the existing state-managed shellfish fisheries in 1998. Currently, there are six separate CDQ groups designated for the Bering Sea. Fisheries covered by the CDQ program include Bristol Bay red king crab, Norton Sound red king crab, St. Matthew blue king crab *Paralithodes platypus*, Pribilof red and blue king crab, and Bering Sea Tanner and snow crab. Observer coverage is required for each CDQ group in CDQ fisheries.

A recent development affecting the Bristol Bay red king crab and Bering Sea *C. bairdi* Tanner crab fisheries is the implementation of the American Fisheries Act (AFA) passed by Congress in 1998. This act gives pollock fishers exclusive fishing privileges in the Bering Sea pollock *Theragra chalcogramma* fishery. To protect the interests of fishers not directly benefited by the AFA, sideboards were established for AFA boats qualified to participate in specific Bering Sea crab fisheries. Observer coverage levels for AFA vessels are currently set at the same level as the general fishery C/V fleet.

In 1999, the board granted ADF&G full authority and responsibility for deploying observers on any vessel participating in BSAI crab fisheries. In addition to the pay-as-you-go funding mechanism, the board endorsed funding for additional observer deployments through department cost recovery fishing. The BOF established an industry oversight task force to make recommendations for program implementation to ADF&G. The state-funded portion of the program was initiated July 1, 2000. See Boyle and Schwenzfeier (2000) for a detailed history of Alaska's mandatory shellfish observer program.

Scallop Observer Program

From the inception of the fishery in 1967 through mid-May 1993, the Westward Region scallop fishery was passively managed employing minimal management measures. Scallop dredges with rings four inches or greater inside diameter were allowed. Closed waters and seasons were established to protect crabs and crab habitat.

During the early 1990s, an influx of vessels from the east coast of the U.S. into the Alaska weathervane scallop fishery prompted concerns from both the scallop industry and the ADF&G about scallop resource conservation and impacts on depressed stocks of king and Tanner, *Chionoecetes bairdi*, crabs. Between 1990 and 1993 statewide scallop harvests were at levels comparable to those between 1968 and 1973, which proved to be unsustainable. Reduced scallop abundance was at least partly responsible for the fishery collapse in the 1970s (Kruse 1994). As a result, the weathervane scallop fishery was designated as a high impact emerging fishery on May 21, 1993 and was closed until an interim management plan could be completed (Barnhart and Sagalkin 1998). Effective July 1, 1993, the resulting Alaska Scallop Fishery Management Plan, includes (1) a requirement for one-hundred percent onboard observer coverage, (2) regulations that limit efficiency and slow the pace of fishery, (3) regulations that reduce the capture rate of small scallops, and (4) crab bycatch limits. Regulations specifically prohibit the use of mechanical shucking machines and chafing gear, restrict the number and size of dredges, require a minimum ring size, and limit the number of crew members. A history of the weathervane scallop management is detailed in Barnhart (2000).

Data collection efforts in the early years of the observer program focused on detailed examination of crab bycatch and collection of baseline data relative to scallop biology. Data collection has evolved and expanded to focus more on scallop biology and stock assessment. Data are collected on crab and halibut bycatch, discarded scallop catch, retained scallop catch, catch composition, scallop meat-weight recovery, location, area and depth fished, and catch per unit effort (CPUE) (Barnhart 1998).

Onboard observers report scallop harvest, number of tows, area fished, and crab bycatch to the ADF&G at least three times each week during the season. These data are incorporated into inseason management. Observer collected data are also used preseason to help set guideline harvest ranges (GHLs).

SHELLFISH OBSERVER PROGRAM GUIDELINES

Shellfish Observer Program guidelines were originally defined by the BOF in 1988. Current guidelines defining the responsibilities of each group (ADF&G, BOF, observer providers, observers, and vessels) involved in the observer program can be found in the Alaska Statutes Title 16, AS 16.05.050 POWERS AND DUTIES OF THE COMMISSIONER, AS 16.05.055 ON-BOARD OBSERVER PROGRAM, AS 16.05.251 REGULATIONS OF THE BOARD OF FISHERIES, Alaska Administrative Code, 5 AAC 39.141 ONBOARD OBSERVER PROGRAM, 5 AAC 39.142 CONFLICT OF INTEREST STANDARDS FOR ONBOARD OBSERVERS AND INDEPENDENT CONTRACTING AGENTS, 5 AAC 39.143 ONBOARD OBSERVER CERTIFICATION AND DECERTIFICATION, 5 AAC 39.144 ONBOARD OBSERVER INDEPENDENT CONTRACTING AGENT CERTIFICATION AND DECERTIFICATION, 5 AAC 39.146 ONBOARD OBSERVER BRIEFING AND DEBRIEFING, 5 AAC 39.645 SHELLFISH ONBOARD OBSERVER PROGRAM, and 5 AAC 39.646 SHELLFISH ONBOARD OBSERVER TRAINEE PROGRAM QUALIFICATIONS AND REQUIREMENTS.

Alaska Department of Fish and Game Responsibilities

The Alaska Department of Fish and Game is responsible for establishing policies and procedures for certification and decertification of contracting agents and observers. The department, for data consistency and reliability, developed observer training standards and sampling methodology and protocols. Department staff continue to develop the program with an outlook toward future data needs.

Independent Contraction Agents' Responsibilities

Independent contracting agent observer providers (observer companies), also referred to as observer companies or contractors, are required by regulation to hire, train, deploy, and logistically support their observers with food, accommodations, sampling equipment, and transportation. Observer companies secure contracts for observer services directly with vessel owners and operators. Observer companies work in conjunction with ADF&G to provide observers for C/Vs in specific BSAI king and Tanner crab fisheries.

Observers' Responsibilities

Observer qualifications include a minimum of a Bachelor degree in the sciences of biology or any branch of biology, or a valid National Marine Fisheries Service (NMFS) observer certification. Observer candidates are required to undergo ADF&G approved training and must demonstrate 90% proficiency on the ADF&G shellfish observer written examination. As part of their training, crab observers must also participate in a practical training exercise administered by the observer program staff in Dutch Harbor. As representatives of ADF&G, observers are required to adhere to a detailed set of professional standards outlined in regulation. Prior to 1991 observer companies provided observer training. After 1991, crab and scallop observer training has been conducted by staff of the University of Alaska, North Pacific Observer Training Center (OTC) in Anchorage. This facility is operated through the University of Alaska Sea Grant program and trains crab and scallop observers for the ADF&G program and groundfish observers for NMFS.

Vessel Owner and Operator Responsibilities

Regulations require the cost of observers to be borne by the shellfish industry or funded by department cost-recovery fishing. When required, vessel owners and operators are to procure and pay for observers through a qualified observer provider and offer to their observer food and accommodations equal to that of the vessel's crew. The vessel must also dedicate a safe work area, necessary totes to hold the contents of sampled pots, and allow the observer opportunity and time to adequately sample the catch according to specific ADF&G requirements. Accurate fishing effort and harvest data must be provided daily to the observer, as well as access to communication equipment at all times.

Vessels must show proof of compliance with United States Coast Guard (USCG) vessel safety requirements. Vessels required to carry an observer must have a current Commercial Fishing Vessel Safety Examination (CFVSE) decal from the USCG. Language in the MSFCMA and in ADF&G commercial shellfish fishing regulations requires that vessels carrying observers meet USCG commercial fishing vessel safety standards. Whenever possible, before a fishery, USCG personnel board and examine safety equipment on vessels that carry observers. Quite often, even though a vessel possesses the CFVSE decal, the vessel's safety equipment does not meet the USCG requirements, usually because equipment currency dates have expired since the last CFVSE.

OBSERVER DUTIES

Upon first boarding a vessel the observer is required by the shellfish observer program coordinator to verify that all safety equipment on the vessel is current and in usable condition as well as to confirm that the vessel displays a current CFVSE decal.

Observers are required to obtain daily catch/location records and periodically report the vessel's crab fishing effort and harvest to ADF&G. Observers also sample and count all the contents of a specified number of crab pots each day and record daily fishing activities and catch information. On processing vessels, observers collect fishing and catch information from all vessels delivering to the processor and periodically report the harvest and effort to ADF&G.

Alaska Department of Public Safety, Fish and Wildlife Protection Division (FWP), assists the OTC and the ADF&G staff to instruct observers in evidence collection, handling procedures, and proper chain-of-custody documentation. In the event that a potential violation is encountered, the FWP will interview the observer and usually ask for a written statement.

In addition to normal duties, observers may be assigned special projects, ranging from shellfish and finfish specimen and morphometric data collection to documenting specific birds and/or mammal observations.

Catcher-Processor Vessel

Daily sampling duties specific to C/P vessel observers are 1) biological sampling and counting of the entire contents of a specified number of randomly selected pots, 2) biological sampling of 100 retained crabs for size and shell age, 3) average weight from a specified number of crab, and 4) size, sex and species compliance monitoring through a legal tally of 600 retained crabs conducted throughout the day. Daily catch/effort data is also collected and reported regularly to ADF&G. Observers are also asked to conduct processed-crab section counts and case weights to verify catch data supplied by the vessel operator on a weekly basis.

Floating-Processor Vessel

Sampling duties specific to floating processor (F/P) vessel observers are 1) interviewing skippers for confidential catch/effort information, 2) determine average weight of retained crabs, 3) biological sampling of 100 retained crabs for size and shell age, and 3) size, sex, and species compliance monitoring through a legal tally of 600 retained crabs being delivered. This data is reported regularly to ADF&G. Sampling duties are conducted on all vessels delivering to the processor.

Catcher-Only Vessel

Daily observer sampling duties specific to C/Vs include 1) biological sampling and counting of the entire contents of a specified number of randomly selected pots and 2) interview skipper for confidential catch information. This information is reported regularly to ADF&G for inseason management. During deliveries the observer 1) determines the average weight of retained crab, 2) collects biological data from 100 retained crabs, and 3) monitors size, sex, and species compliance through a legal tally of 600 crab in the live tank.

PROGRAM REVIEW

Recent Changes to the Crab Observer Program

Several significant changes were made to the crab observer program at the March 1999 BOF meeting and implemented by the department's shellfish observer program on July 1, 2000.

Catcher-only Observer Deployments

In addition to existing requirements for observer coverage on at-sea processing vessels, ADF&G was given the regulatory authority to deploy crab observers on an adequate number of C/Vs in each BSAI crab fishery. This regulatory authority allows the department to collect much needed biological and fishery-based data necessary for resource management. It has also allowed the department to meet requirements of the MSFCMA and the Fishery Management Plan for Bering Sea/Aleutian Islands King and Tanner crabs (NMFS 1998).

Preseason Vessel Registration

Along with regulations providing for observer coverage on a portion of C/Vs, new regulations were adopted which require all vessels to register preseason for BSAI king and Tanner crab fisheries. The preseason list of registered vessels is used to randomly select C/Vs that will carry observers. Even though they are required to preseason register, vessels less than 75 ft. are not required to carry observers because there are few vessels in that size category and therefore are not considered a significant component of the fleet.

Test Fishery Authority to Fund Selected Shellfish Observer Deployments

The ADF&G has test fish authority to fund a portion of observer deployments in the BSAI crab fisheries. This test fish authority is capped at \$650,000 and structured as a revolving fund, which, if not used in one fiscal year, may be rolled into and available for the following fiscal year. A total of \$669,500 was collected for the test fish funded portion of the observer program from the harvest and sale of red king crab after the close of the 1999 Bristol Bay red king crab fishery (Table 7-1 and 7-2). The department adopted a policy not to conduct additional cost recovery fishing until the balance was projected to fall below \$300,000.

Cost recovery funds collected in 1999 were used to fund a portion of the crab observer deployments beginning on July 1, 2000. Continued closure of the 2000 Saint Matthew blue king, Pribilof red and blue king, and Bering Sea Tanner crab fisheries, along with a shortened 2001 Bering Sea snow crab fishery, reduced the need for cost recovery funds. Based on the anticipated coverage levels for fiscal year 2001 (FY01), the cost recovery funds collected in 1999 were adequate for the duration of FY01.

The test-fish funded portion of the observer program expenses totaled \$47,500 in FY00, and \$262,375 during FY01. The projected expenditure for FY02 is \$370,000. The observer fund balance at the end of FY02 was projected to be below \$300,000. Therefore cost recovery was conducted after the close of the 2001 Bristol Bay red king crab general fishery. A total of \$461,045 was collected from the sale of red king crab (Table 7-1 and 7-2).

Crab Observer Oversight Task Force

The BOF established a 15 member Crab Observer Oversight Task Force (COOTF), comprised of crab industry, to interact with the ADF&G and BOF on crab observer issues. The issues include observer coverage levels and the cost recovery program for funding observer deployments.

The COOTF and ADF&G met seven times between April 1, 1999 and May 30, 2000 to discuss possible changes to the crab observer program. Among the task force recommendations adopted for the 2000-2001 season was the use of cost recovery funds to pay for C/V observer coverage in fisheries that historically had no C/V observers. The fisheries include St. Matthew and Pribilof king crab fisheries, Bristol Bay red king crab, Bering Sea Tanner and snow crab, and the Bering Sea golden king crab.

The COOTF and ADF&G met once during FY01 on June 14, 2001 via teleconference. During this meeting the task force agreed to continue to strive for the same coverage level goals adopted for the 2000/2001 fisheries (Table 7-3). Observer coverage is either paid directly by the vessel (pay-as-you-go), funded by cost-recovery proceeds generated by department test fishing, or a combination of the two. Funding for observer coverage during the 2002 Bering Sea golden king crab fishery was changed from exclusively funded by test fish funds during the 2001 season to a combination of 50 percent pay-as-you-go and 50 percent funded by test fish on a vessel by vessel basis for the 2002 season.

Observer coverage levels remain at 100% and funded under the pay-as-you-go system for at-sea processors participating in BSAI king or Tanner crab fisheries, for all vessels in the Aleutian Islands king

crab fisheries, and for all vessels participating in hair crab, deep-water king crab, and deep water Tanner crab fisheries under a commissioner's permit. Likewise, observer coverage for vessels in the CDQ and AFA fisheries remain under the pay-as-you-go system.

Observer Coverage Levels and Procurement of Observers

2000/2001 Season

The department's goal for the 2000/2001 season was to deploy observers on 10% of C/Vs per vessel size category (75' - 125' and greater than 125 feet), with a minimum of five observers per category in selected fisheries (Table 7-3). ADF&G initiated a plan to hire and deploy eight seasonal ADF&G staff observers. The remainder of the observers required for the 2000/2001 season would be obtained through a formal invitation to bid (ITB) sent out to observer contracting companies. The solicitation required the successful bidder to provide up to 15 crab observers per fishery. No responses were received. Contractors indicated uncertainties about the number and duration of upcoming crab fisheries and could not bid without greatly elevating observer costs. ADF&G subsequently sent out smaller ITBs for observer services on a fishery-by-fishery basis. Contractors responded to the ITBs and were able to provide observers for reasonable costs; however, they were not able to provide enough observers to meet the department's coverage level goals.

During the summer of 2000, two recruitments were conducted in an effort to hire eight ADF&G staff observers. Six applicants were determined qualified and hired by the department. One of the probationary ADF&G staff observers did not pass the written exam upon completion of training and was not retained. In addition to the five ADF&G staff observers, four candidates recruited by two of the observer companies were also trained during the class.

During 2000/2001 season the state-funded observer coverage levels on C/V vessels was 5.1% for the 2000 Bristol Bay red king crab fishery and 3.5% for the 2001 Bering Sea snow crab fishery. Coverage levels were short of the 10% goal because of lack of available observers.

2001/2002 Season

Changes were made for the 2001/2001 ITB and sent out to observer companies in June 2001. The process was more contractor-friendly because contractors did not have to provide a minimum number of observers to meet the contract terms. Observer services were requested from the lowest bidder first. The lowest bidder supplied as many observers as possible to help meet the demand. If the required numbers of observers were not available from the lowest bidder the department then requested additional services from the next lowest bidder.

In July 2001 five new staff were hired, and trained; all new staff passed the exam. In addition, four observer companies trained 16 observer recruits at the OTC, of which 14 passed the final exam and became trainee crab observers.

Because observer availability improved for the 2001/2002 fishing seasons, the test-fish funded observer coverage levels increased on catcher-only vessels. Coverage was 10% during the 2001 Bristol Bay red king crab season and 5.2% for the 2002 Bering Sea snow crab season. The observer coverage level for the Bering Sea snow crab season fell short of the 10% level because a number of observers who deployed during the Bristol Bay red king crab season found other employment and were unavailable for deployment as crab observers in January, 2002.

2001 OBSERVER DEPLOYMENTS BY FISHERY

Tracking of crab observer deployments and vessel assignments for all shellfish fisheries in this report are by calendar year. The length of an observer deployment in observer-days is defined as the total number of days from the observer's briefing to their debriefing. One observer-month is equivalent to 30 observer-days.

Observer activity in 2001 increased from 1999, and 2000 (Table 7-4, and Figure 7-1). Spikes of observer activity in 2001 occurred during the months of January, February, August and October coinciding with the Bering Sea snow crab, Eastern Aleutian Islands golden king crab, and Bristol Bay red king crab fisheries (Table 7-5 and Figure 7-2). The total number of vessels requiring observer coverage has remained fairly steady since 1996; however, the ratio of C/Vs to processing vessels changed to reflect a steady industry trend away from processing vessels (Table 7-6).

During the 2001 calendar year, 12 fisheries were conducted that required observer coverage. A total of 163 briefings, 39 midtrip debriefings, and 162 debriefings were conducted in 2001. Forty percent of the observer sessions in 2001 were conducted for the Aleutian Islands golden king crab fishery, with the Bristol Bay general red king crab observer sessions making up 18% of the year's observer activity (Table 7-7 and Figure 7-3).

Observed vessels pulled a total of 231,113 pots. Of those, 13,589 pots were sampled for bycatch by observers for an overall sampling rate of 5.9% (Table 7-8).

Aleutian Islands Golden King Crab For Calendar Year 2001

The Aleutian Islands (Area O) golden king crab *Lithodes aequispinus* fishery opens annually on August 15 and continues through August 14 of the following calendar year unless closed earlier by emergency order. One hundred percent observer coverage is required on all vessels participating in the Aleutian Islands king crab fisheries. Observer deployment data summarized for this fishery are for calendar year 2001, a period encompassing the last half of the 2000/2001 fishery and the first half of the 2001/2002 fishery. Portions of Area O golden king crab fishery, unlike all other fisheries in the BSAI, remain open most of the year.

That portion of the Aleutian Islands king crab Registration Area O west of 174° W longitude was closed by emergency order on May 28. The first briefing for 2000/2001 in 2001 was conducted on January 4. The last debriefing for the 2000/2001 fishery year was conducted on June 4, 2001.

The 2001/2002 Registration Area O golden king crab fishery opened on August 15, 2001. The eastern portion of Registration Area O closed by emergency order on September 10, 2001. The first briefing date for the fishery was on August 10, 2001.

During the 2001 calendar year Aleutian Islands golden king crab fishery, observers were deployed on one C/P and 20 C/Vs for a total of 75.1 observer months during a total of 57 observer trips (Table 7-9). For this fishery, 58 briefings, 28 midtrip debriefings and 57 debriefings were conducted in calendar year 2001 (Table 7-7 and Figure 7-3). The total number of pots pulled by vessels that carried observers in 2001 were 176,334. Of these pots 9,844 (5.6%) were sampled for bycatch. (Table 7-8).

Since 1997, there has been a shortage of available observers during the months of August and September relative to the needs of vessels at the time of the Aleutian Islands golden king crab fishery opening. By July 15, 2001 vessels and observer companies began contacting ADF&G regarding serious observer shortages for the 2001/2002 Aleutian Islands golden king crab season opening. More vessels than usual planned to participate beginning on August 15. Five of the 21 vessels that indicated interest could not obtain observers therefore observer program staff immediately contacted the OTC director. In less than 2 weeks a rapid response crab observer training class was conducted at OTC to help fill the immediate need for observers. In addition, department staff in Dutch Harbor trained and tested one former crab observer the weekend before the opening of the 2001 Aleutian Islands king crab fishery.

By the season opening on August 15, one vessel in the fleet had not obtained an observer. That vessel contracted with ADF&G for a trained department employee to act as a crab observer until one was available through an observer provider.

2001 Bering Sea General Snow Crab Fishery

The 2001 general fishery opened on January 15. A total of 207 vessels participated in the fishery. Most of the C/Ps began fishing on January 15 but the C/V fleet did not settle on a snow crab price until February 1, 2001. During the two weeks between January 15 and February 1 most C/Vs remained tied up or fished for cod and test fish funded contract observers remained onboard their assigned C/Vs. The fishery closed by emergency order February 14. The department's goal was to cover catcher vessels at 10%, but due to the lack of observer availability, actual coverage level on C/Vs was 3.5% (Table 7-9 and Figure 7-4). Observers were deployed on seven C/Ps, four F/Ps, and seven C/Vs accounting for 22.7 months of deployment time during a total of 20 observer trips (Table 7-9). Of the four F/P's, one vessel participated as a C/P during the season, then took deliveries after the closure. The first briefing date for the 2001 snow crab fishery was on January 9 and the last debriefing date was on February 26. Twenty briefings, one midtrip debriefing, and 20 debriefings were conducted for this snow crab fishery

(Table 7-7 and Figure 7-3). The total number of pots pulled by vessels that carried observers were 24,627 (3.3%). Of these pots 811 were sampled for bycatch (Table 7-8).

2001 Bering Sea CDQ Snow Crab Fishery

The 2001 Bering Sea CDQ snow crab fishery began 72 hours after the closure of the general fishery on February 17. The observer requirement was two observers for each of the six CDQ groups. A total of 11 C/Vs fished and 11 observers were deployed accounting for 9.6 months of deployment during a total of 11 observer trips (Table 7-9). The first briefing for this CDQ fishery occurred on February 15 and the last debriefing was conducted on April 2. For the 2001 CDQ snow crab fishery 11 briefings, no midtrip debriefings, and 11 debriefings were conducted (Table 7-7 and Figure 7-3). The total number of pots pulled by vessels that carried observers was 14,320. Of these pots, 771 (5.4%) were sampled for bycatch (Table 7-8).

2001 Bering Sea Golden King Crab Fishery

The Bering Sea golden king crab fishery opens annually on January 1 and closes on December 31 unless closed earlier by emergency order. Since July 1, 2000, 100% observer coverage is required on all vessels that participate in this fishery. Observer coverage was funded in full through the state-funded portion of the observer program.

Six vessels participated in the 2001 fishery. The first vessel began fishing in mid February after the snow crab season closure. The Pribilof District of the Bering Sea golden king crab fishery closed on April 15. One vessel moved to the St. Matthew District of the Bering Sea to continue fishing golden king crab.

Observers were deployed on 6 C/Vs accounting for 10.2 months of deployment during a total of nine observer trips (Table 7-9). The first briefing for this fishery was conducted on February 20 and the last debriefing was on May 25. Nine briefings, two midtrip debriefings and nine debriefings were conducted for this fishery (Table 7-7 and Figure 7-3). The total number of pots pulled by vessels that carried observers were 4,513. Of these pots 1,356 (30%) were sampled for bycatch (Table 7-8). The high pot sampling percentage in this fishery was a result of slower paced fishing and a low CPUE, enabling observers to sample a greater percentage of pots pulled.

2001 Western Aleutian Red King Crab Surveys, January and November

The department assessed a portion of the Western Aleutian Islands red king crab stock from January through mid-February and again from November 1 to November 30. The survey focused on the Petrel Bank area that has been closed to commercial red king crab fishing since the 1995/1996 season. Because of fiscal constraints, the department structured the survey to allow commercial fishers to assist in the survey. An ADF&G commissioner's permit authorized the retention and sale of all legal sized red king crab captured. However, vessels were required to carry observers and cover observer costs.

Observers acted as crew leaders on the survey, working closely with the captain and crew to collect all survey data required by the permit. As a condition of the permit, a briefing for each vessel participating was conducted by observer and management staff and attended by both the vessel operator and the observer assigned to that vessel. This provided an excellent forum for any concerns or questions about the survey for ADF&G from both the vessel operators and observers.

In the January survey, one observer was deployed on one C/P. During the November survey, observers were deployed on one C/P and four C/Vs. The 2001 survey totaled of 8.3 months observer at-sea deployment time during six observer trips (Table 7-9). Six briefings, one midtrip debriefing, and six debriefings were conducted for this fishery (Table 7-7 and Figure 7-3). The total number of pots pulled by vessels that carried observers was 699. Of these, 137 pots (19.6%) were sampled for bycatch (Table 7-8). As required by the survey permit, the contents of all pots pulled were categorized and counted by sex, size, and species. The crew, under the direction of the observer, assisted in the collection of this data.

2001 Bristol Bay General Red King Crab Fishery

The Alaska Department of Fish & Game set a goal of 10% observer coverage depending on observer availability, on C/Vs during the 2001 Bristol Bay red king crab *Paralithodes camtschaticus* fishery. Two hundred thirty-seven vessels pre-season registered to participate in this fishery. Two hundred thirty vessels pre-season registered as C/V, including thirty-two AFA vessels. Six C/P vessels (two of which operated as F/Ps post-season) and one F/P vessel pre-season registered for the season. Observer coverage was required on twenty-three vessels in the C/V portion of the fleet. Sixteen vessels less than or equal to 125 feet and seven vessels greater than 125 feet carried observers including AFA vessels. All C/V observer coverage was test fish funded with the exception of three AFA vessels. The AFA cooperative collectively funded the observer coverage for their fleet. One hundred percent observer coverage is required and paid for in the C/P and F/P portion of the fleet.

Rough seas creating unsafe conditions for work on deck, were a major limiting factor for sampling. Many observers were forced to stop sampling during fishing operations due to weather-related safety conditions on deck. On October 17, eleven of the 23 C/V operators stopped fishing for a period of two to 12 hours due to severe weather conditions. Observers were deployed on six C/Ps, three F/Ps, and 23 C/Vs, resulting in 12.6 months of observer deployment time during a total of 33 observer trips (Table 7-9). Of the three F/Ps, two vessels participated as a C/P during the season, then took deliveries after the closure. The first briefing for this fishery was conducted on October 8 and the last debriefing was conducted on October 29. Thirty three briefings, no midtrip debriefings, and 33 debriefings took place for this fishery (Table 7-7 and Figure 7-3). The total number of pots pulled by vessels that carried observers was 8,104. Of these pots, 504 (6.2%) were sampled for bycatch (Table 7-8). Evidence for the retention of sublegal male red king crab and female red king crab was collected by two observers during the offloads (Table 7-10).

2001 Bristol Bay CDQ Red King Crab Fishery

The 2001 Bristol Bay CDQ red king crab fishery began 72 hours after the closure of the general fishery on October 21. The observer requirement for vessels participating in this fishery was one observer for each of the six CDQ groups. A total of 10 C/Vs participated. Observers were deployed on six C/Vs, resulting in 2.7 months of deployment during a total of 6 observer trips (Table 7-9). The first briefing date for this fishery was on October 20 and the last debriefing date for the fishery was on November 7. Six briefings, one midtrip debriefing and six debriefings were conducted for this fishery (Table 7-7 and Figure 7-3). The total number of pots pulled by vessels that carried observers was 2,516. Of these, 166 pots (6.6%) were sampled for bycatch (Table 7-8).

2001 Permit Fisheries

In 2001, the only permit fisheries requiring observer coverage were the grooved Tanner crab fisheries in the Eastern Aleutian Islands, South Peninsula, and Bering Sea Districts. In the Eastern Aleutians, one observer deployed for 0.9 months on a C/V and in the Bering Sea District, one observer was deployed on one C/V for a total of 1.6 months at-sea (Table 7-9). Even though an observer was briefed and debriefed for the South Peninsula grooved Tanner crab fishery no fishing occurred. Due to the limited number of vessels participating in these districts all fishing and sampling information is confidential.

2001 Norton Sound Red King Crab Fishery

The Norton Sound red king crab fishery is managed out of the department's Nome office. The Nome shellfish management staff conducts all observer briefings and debriefings for this fishery. One observer was deployed out of Nome in 2001 (Table 7-9).

2001 Weathervane Scallop Fisheries

The 2001 scallop fisheries opened in all state and federal waters on July 1. Statewide, observers were deployed on four unique C/Ps completing 15 trips in four different scallop registration areas and totaling 14.1 observer deployment months. Observers were deployed in the Bering Sea, Kodiak, Prince William Sound, and Yakutat Registration Areas during calendar year 2001. Tables 7-11, 7-12, and 7-13 show statewide scallop observer activity by area and year from 1993 through 2001.

2001 Observer Training, Certification, and Decertification

Crab Observer Program

Since the inception of the observer program, 32 crab observer-training classes have been conducted, attended by 469 candidates. At the end of 2001, there were 56 certified observers in the crab observer program. Program exam and candidate information is summarized in Table 7-14.

Two crab observer training classes were conducted at the OTC in Anchorage during 2001. Both classes were conducted differently than in recent years and implemented on a trial basis only. The first class was a rapid response to a serious observer shortage in August. The second class was scheduled and of normal duration, but the syllabus was altered to accommodate the individuals that had been previously trained as scallop observers.

The first class in August was put together in mid-July as a response to a serious observer shortage. ADF&G and OTC approved and scheduled a 3-day crab observer course as a short-term remedy for the observer shortage. When contacted by the department in July, the OTC director indicated there were two days at the end of July in which they could train crab observers whose certification lapsed due to inactivity. As the end of the month drew near, no former crab observers were interested. Consequently, the pool from which to recruit crab observers was expanded to include certified scallop observers and certified level II groundfish observers. All applicants had to be observers in good standing with good deployment performance records and also approved by both ADF&G and OTC. To help students not familiar with the State of Alaska's crab fisheries management and regulations, OTC personnel, as well as the crab observer instructor worked hard to accommodate the situation by providing space and time for one more training day. The OTC observer instructor developed a syllabus, approved by ADF&G, that covered all aspects of crab fisheries management and crab observer data collection that would enable students to pass the ADF&G crab observer examination. The entire training and testing was conducted in 3 days, requiring long classroom days and late night homework. Four out of the five students passed the test with a score of 90% or above.

Both students and instructor felt this condensed and intensive training should not be repeated because of the amount of learning that had to occur in such a short time. Most felt this course could be done in five or six days with the same applicant and approval criteria. ADF&G briefing personnel extended the briefing time to include more detail and time for questions and answers because of the truncated class time. Upon evaluation, the deployment performance of these four trainees was acceptable and all data errors recoverable. As with all shellfish observer trainees, midtrip debriefing times were also extended to discuss all aspects of the data collection to assure accuracy.

To provide another needed observer for the Aleutian Islands golden king crab fleet, the weekend following the OTC crab observer short course, a two-day instruction and exam was conducted by ADF&G personnel in Dutch Harbor to retrain a former crab observer whose certification had lapsed due to inactivity. Because of the short notice given for the rapid response crash course this observer was not available for training the previous week.

The second class was scheduled by OTC and approved by ADF&G in April of 2001 for dates September 24 through October 5. A new split syllabus course was developed to allow certified scallop observers and prior crab observers decertified due to inactivity to attend the second week of class only. The department worked with OTC to overhaul the crab training course syllabus for the purpose of accommodating observers who had previous shellfish observer training.

Both students and instructor felt that waiting until the second week to cover all sampling and data collection lessons was too much for the class to absorb in four days of classroom and homework assignments. The time was too short to cover all aspects of sampling, to clear up confusion, and answer questions effectively and adequately. Furthermore, in general, the class felt unsure about their preparedness for the fifth and final day of the second week when they took an exam that determined whether or not they would continue employment as an observer. Conversely the students felt that the first week of class was filled with dead time that could have been used to begin instruction and assignments of sampling and data collection protocols.

Nineteen of the 21 candidates passed the ADF&G crab observer examination and went onto the dockside practicum conducted in Dutch Harbor on October 7 and 8 aboard the F/V Royal Viking. Of the 19 trainees 12 had previous observer experience.

Both of the experimental classes that were conducted in 2001 are not going to be repeated in the future because of the lack of time allowed to learn all the necessary material. However, ADF&G and OTC will continue to consider alternative instruction for specific situations and evaluate these accordingly. As per shellfish regulation 5 AAC 39.143, all candidates must pass the final ADF&G crab observer exam with a score of 90% or better to be employed as an ADF&G crab observer. Whenever a truncated crab class is offered, only candidates with previous shellfish observer experience will be considered and successful completion of the class will give those observers the same privileges as candidates that complete the normal two week class.

During 2001, no crab observer certification lapsed for 12 months of inactivity or for expiration of their 180-day trainee permit. In 2001 the observer turnover was the lowest since 1990. See Table 7-14 for a summary of observer training and participation since 1988.

Scallop Observer Program

One scallop observer training class was held at the OTC in June of 2001. Four candidates attended training and were issued trainee permits. All trainee observers subsequently received full certification by the end of 2001. Certification data, by year since inception of the Scallop Observer Program, is presented in Table 7-15.

No scallop observer certification lapsed in 2001 for 12 months of inactivity and no scallop observers were decertified for failure to comply with observer program standards. Eight certified scallop observers remained in the program on December 31, 2001.

2001 Evidence Collection

State shellfish observers collected evidence associated with potential illegal activities on five observer trips in calendar year 2001. The percentage of trips where evidence was collected was the lowest since the inception of the observer program. All fisheries except the Aleutian Islands golden king crab fishery had lower incidences of evidence collection. Evidence collection by observers, for the years 1991-2001, is summarized in Table 7-10.

For the years 1991-1995, most evidence was collected in the Bering Sea Tanner crab fishery. In 1996 and 1997, the Aleutian Islands golden king crab fishery accounted for most evidence collected. In 1998, both the Aleutian Island golden king and Bering Sea snow crab fisheries generated the most evidence collections. In the Aleutian Islands golden king crab fishery, the percentage of deployments where evidence was collected went from 31% in 1998 to only 3% in 1999. These percentages climbed slightly in 2000 and 2001 to 6.7% and 5.3%, respectively. In 2001, 60% of all evidence collected was from the Aleutian Islands golden king crab fishery and the remaining 40% were collected during the Bristol Bay red king crab fishery (Table 7-10).

2001 Data Analysis

The large volume of biological data collected by shellfish observers is summarized annually by the observer program database staff. A summary and analysis of this data is available in two separate reports: Barnard, Moore, and Burt (2001) and Barnard (2001).

Conflict of Interest Potential of Current Pay-As-You-Go System

Fishing vessel companies continue to negotiate directly with observer companies for observer services, which creates a potential conflict of interest. The competitive pressure on observer contracting companies to procure and maintain contracts with fishing vessel companies creates incentives for vessels to manipulate the system to their advantage. The pressure on companies to provide observers who meet the needs of their clients can influence an observer company's hiring practices.

The current system can place an observer in a position of potential compromise between ADF&G requirements (which include documenting illegal activities and collecting evidence) and wishes of the vessel for the observer to ignore violations. An observer's willingness to ignore violations committed by the vessel can dramatically affect profits and ensure the observer company future contracts.

Observer Morale and Unionization

Prior to observer unionization, competitive pressures resulted in reduced observer salaries and contributed to the high turnover rate of observers. Low observer morale spanning the years prior to observer unionization was principally caused by decreases in observer pay and deploying new, trainee

observers over experienced observers. This low morale may have adversely influenced the quality and integrity of the observer data.

These factors led observers in the state shellfish and federal groundfish observer programs to unionize under the Alaska Fishermen's Union in 1997. Collective bargaining agreements with the five observer companies were finalized and unionized observers completed all observer deployments for 1998. New regulations enacted by the BOF in 1996 required that certified observers perform 65% of a company's annual observer deployment days. These developments have contributed to improved observer morale and higher retention rates of experienced observers.

NMFS Groundfish Observer Program

The same independent observer companies that provide shellfish observers also supply observers for the NMFS groundfish observer program. NMFS still seeks to eliminate the direct negotiations between the observer companies and the fishing vessel companies and the inherent conflict of interest in the current system. The intended "arms length" relationship between the vessels and observer companies does not exist and all proposals to create this desired relationship have been repealed or rejected to date. NMFS commissioned an independent review of their program that was completed in 2000 (MRAG Americas 2000).

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Table 7-1. Mandatory shellfish observer program cost recovery harvest statistics.

Year	Number of		Harvest ^{a,b}	Number of Pots Pulled	Average		Deadloss ^a
	Landings	Crabs			CPUE	Weight ^a	
1999 ^c	2	16,930	106,179	541	31.0	6.3	245
2001 ^c	2	13,065	90,151	463	28.2	6.9	103

^a In pounds.

^b Deadloss included.

^c Cost recovery fishing occurred after the general Bristol Bay red king crab fishery.

Table 7-2. Economic performance for the mandatory shellfish observer program cost recovery harvest.

Year	Harvest ^a	Value		Charter Dates	Total Charter Days
		Exvessel	Total		
1999	105,934	\$6.32/lb.	\$669,500	10/25-11/10	17
2001	90,048	\$5.12/lb.	\$461,045	10/23-11/08	17

^a In pounds, deadloss not included.

Table 7-3. Observer coverage levels for the Bering Sea and Aleutian Islands crab fisheries implemented by the Crab Observer Oversight Task Force for 2001/2002.

<i>Fishery</i>	Preseason	Catcher Vessels ^b		<u>At-sea Processors</u>	
	Registration Deadline ^a	Observer Coverage	Cost-Recovery Funded?	Observer Coverage	Cost-Recovery Funded?
St. Matthew blue king crab	August 24	Partial	YES	100%	NO
Pribilof red & blue king crab	August 24	Partial	YES	100%	NO
Bristol Bay red king crab	September 24	Partial	YES	100%	NO
Bering Sea Tanner crab	September 24	Partial	YES	100%	NO
Bering Sea snow crab	December 24	Partial	YES	100%	NO
St. Matthew brown king crab	21-days prior	100%	50%	100%	NO
Pribilof brown king crab	21-days prior	100%	50%	100%	NO
Hair crab	none	100%	NO	100%	NO
Triangle Tanner and grooved Tanner	none	100%	NO	100%	NO
Aleutian king crab (red or brown)	none	100%	NO	100%	NO
Cherry and scarlet king crab	none	100%	NO	100%	NO

^a When the pre-registration deadline occurs on a weekend or holiday, the deadline is extended to the next business day.

^b AFA and CDQ catcher vessels are pay-as-you-go.

Table 7-4. Number of observer sessions (briefings, midtrip debriefings and final debriefings) from 1991 - 2001.

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Yearly Totals
1991	73	56	94	68	63	49	24	7	24	43	96	54	651
1992	101	60	41	111	8	10	13	31	22	28	62	44	531
1993	71	24	75	15	4	14	14	20	42	35	62	36	412
1994	49	4	81	25	8	7	28	38	38	26	26	20	350
1995	41	70	20	23	31	17	16	36	44	84	65	31	478
1996	42	22	68	28	36	26	39	42	34	53	64	37	491
1997	37	22	54	14	15	10	10	25	27	38	82	13	347
1998	32	17	67	20	35	14	9	28	43	65	50	2	382
1999	23	8	43	33	22	10	13	29	39	74	36	15	345
2000	24	7	26	38	15	11	13	42	42	86	21	10	335
2001	27	43	25	20	20	10	9	41	29	104	25	11	364
Monthly Totals	520	333	594	395	257	178	188	339	384	636	589	273	N/A

Table 7-5. Number of observer sessions for each month of calendar year 2001 and 10-year average for 1991-2000.

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Totals
Briefings	24	22	4	7	7	4	5	25	4	54	6	1	163
Midtrip Debriefings	0	1	6	3	1	1	1	10	7	6	2	1	39
Final Debriefings	3	20	15	10	12	5	3	6	18	44	17	9	162
Total	27	43	25	20	20	10	9	41	29	104	25	11	364
10-yr. Average	49.3	29.0	56.9	37.5	23.7	16.8	17.9	29.8	35.5	53.2	56.4	26.2	N/A

Table 7-6. Summary of observer activity in the shellfish observer program, from inception (first briefing September 20, 1988) through December 31, 2001.

Year	Vessels ^a				Observer	Deployed	Certified at	Observer	Number of	Active
	C/P	F/P	C/V	S/V	Trips	Observers	Year's End ^b	Months	Sessions ^c	Contractors
1988	21	6	0	0	46	28	80	31.4	85	6
1989	22	12	0	0	124	53	98	124.0	250	7
1990	26	15	0	0	140	61	119	163.5	279	7
1991	33	18	0	1	282	105	104	352.2	651	6
1992	32	19	2	0	225	100	103	280.3	531	7
1993	29	21	14	11	235	80	84	216.8	412	7
1994	24	17	19	12	185	74	103	178.8	350	7
1995	21	15	50	8	211	91	94	213.0	478	5
1996	16	13	38	5	209	82	81	250.5	491	5
1997	15	11	30	6	157	71	63	184.4	347	5
1998	13	11	44	8	186	62	53	203.1	382	5
1999	11	11	50	8	146	50	51	149.4	345	4
2000	9	6	62	6	154	49	42	128.8	335	3
2001	9	5	61	4	162	59	64	159.4	364	4

^a Unique vessels requiring observer coverage: C/P = Catcher Processor, F/P = Floating Processor, C/V = Catcher-Only Vessel, and S/V = Scallop Vessel.

^b Total number of observers who possess either a shellfish observer trainee permit or a full shellfish observer certification permit on December 31st of each year.

^c Includes briefings, midtrip debriefings and final debriefings.

Table 7-7. Number of observer sessions per fishery for calendar year 2001.

Fishery	Number of			Totals	Percent of Total Sessions
	Briefings	Midtrips	Debriefings		
Aleutian Islands golden king crab	58	28	57	143	40
Bering Sea golden king crab	9	2	9	20	6
Bering Sea snow crab	20	1	20	41	11
Bering Sea CDQ snow crab	11	0	11	22	6
Eastern Aleutian grooved Tanner crab	1	1	1	3	<1
South Peninsula grooved Tanner crab	1	0	1	2	<1
Bering Sea grooved Tanner crab	2	1	2	5	1
Bristol Bay red king crab	33	0	33	66	18
Bristol Bay CDQ red king crab	6	1	6	13	4
Norton Sound red king crab	1	0	1	2	<1
Aleutian Islands red king crab survey	6	1	6	13	3
Statewide scallops	15	4	15	34	9
Totals	163	39	162	364	100

Table 7-8. Percentage of pots sampled by observers on vessels by fishery for calendar year 2001.

Fishery	Number of		Percent Sampled
	Pots Pulled	Pots Sampled	
Aleutian Islands golden king crab	176,334	9,844	5.6
Bering Sea golden king crab	4,513	1,356	30.0
Bering Sea snow crab	24,627	811	3.3
Bering Sea CDQ snow crab	14,320	771	5.4
Eastern Aleutian grooved Tanner crab	Confidential		
Bering Sea grooved Tanner crab	Confidential		
South Peninsula grooved Tanner crab	0	0	-
Bristol Bay red king crab	8,104	504	6.2
Bristol Bay CDQ red king crab	2,516	166	6.6
Aleutian Islands red king crab survey	699	137	19.6
Totals	231,113	13,589	5.9

Table 7-9. Summary of observed vessels, observer trips, percentage of total observer trips, observer-months at sea, and percentage of total observer-months at sea by fishery for the year 2001.

Fishery	Observed Vessels			Observer Trips	Percent of Total	Observer Months	Percent of Total	Percent Coverage		Vessel Participation
	C/P	F/P ^a	C/V		Obs. Trips		Obs. Mo.	C/P & F/P	C/V	
Aleutian Islands golden king crab	1	0	20	57	35.40	75.1	47.11	100	100	21
Bering Sea golden king crab	0	0	6	9	5.59	10.2	6.40	-	100	6
Bering Sea snow crab	7	4	7	20	12.42	22.7	14.24	100	3.5	207
Bering Sea CDQ snow crab	0	0	11	11	6.83	9.6	6.02	-	100	11
Eastern Aleutian grooved Tanner	0	0	1	1	0.62	0.9	0.56	-	100	1
South Peninsula grooved Tanner	0	0	1	1	0.62	0	0.00	-	100	1
Bering Sea grooved Tanner	0	0	1	2	1.24	1.6	1.00	-	100	1
Bristol Bay red king crab	6	3	23 ^b	33	20.50	12.6	7.90	100	10	232
Bristol Bay CDQ red king crab	0	0	6	6	3.73	2.7	1.69	-	60	10
Norton Sound red king crab	0	1	0	1	0.62	1.6	1.00	100	0	31
Aleutian Islands red king survey	1	0	3	6	3.73	8.3	5.21	100	100	4
Statewide scallops	4	0	0	15	9.32	14.1	8.85	100	-	4
Totals	13 ^c	5 ^c	62 ^c	162	100	159.4	100	N/A	N/A	N/A

^a May include vessels that also operated as a C/P during the same fishery.

^b Includes three AFA vessels.

^c Vessels are unique.

Table 7-10. Summary of evidence collected by shellfish observers, 1991 - 2001.

Fishery	Year	Observer Trips	Trips with Evidence	Percent of Observed Trips ^a	Percent of Year's Evidence ^b
St. Matthew / Pribilof red and blue king crab	1991	11	0	0	0
	1992	15	1	6.7	2.4
	1993	11	1	9.1	5.6
	1994	11	1	9.1	6.7
	1995	7	1	14.3	4.3
	1996	7	4	57.1	19
	1997	4	0	0	0
	1998	6	1	16.7	2.5
	1999		No Fishery		
	2000		No Fishery		
	2001		No Fishery		
Dutch Harbor area golden king crab	1991	4	1	25	2.4
	1992	6	1	16.7	2.4
	1993	0	0	0	0
	1994	2	1	50	6.7
	1995	19	0	0	0
Adak area red and golden king crab	1991	21	3	14.3	7.1
	1992	20	5	25	11.9
	1993	12	1	8.3	5.6
	1994	11	2	18.2	13.3
	1995	29	5	17.2	21.7
1996 golden king crab fishery only	1996	46	3	6.5	14.3
Aleutian Islands golden king crab ^c	1996	34		5.9	28.6
	1997	53	13	24.5	54.2
	1998	35	11	31.4	26.8
	1999	37	1	2.7	10
	2000	60	4	6.7	57.1
	2001	57	3	5.3	60
Bristol Bay red king crab	1991	39	8	20.5	19
	1992	24	8	33.3	19
	1993	25	3	12	16.7
	1994		No Fishery		

-Continued-

Table 7-10. (page 2 of 4)

Fishery	Year	Observer Trips	Trips with Evidence	Percent of Observed Trips ^a	Percent of Year's Evidence ^b
Bristol Bay red king crab (cont'd)	1995		No Fishery		
	1996	7	0	0	0
	1997	15	3	20	12.5
	1998	22	3	13.6	7.3
	1999	11	3	27.3	30
	2000	26	1	3.8	14.3
	2001	33	2	6.1	40
Bering Sea snow crab	1991	149	18	12.1	42.9
	1992	106	19	17.9	45.2
	1993	63	8	12.7	44.4
	1994	55	8	14.5	53.3
	1995	50	14	28	60.9
	1996	49	3	6.1	14.3
	1997	40	4	10	16.7
	1998	35	11	31.4	26.8
	1999	27	5	18.5	50
	2000	15	0	0	0
	2001	20	0	0	0
Bering Sea Tanner crab	1991	53	12	22.6	28.6
	1992	43	8	18.6	19
	1993	23	5	21.7	27.8
	1994	10	2	20	13.3
	1995	12	2	16.7	8.7
	1996	3	0	0	0
	1997		No Fishery		
	1998		No Fishery		
	1999		No Fishery		
	2000		No Fishery		
	2001		No Fishery		

-Continued-

Table 7-10. (page 3 of 4)

Fishery	Year	Observer Trips	Trips with Evidence	Percent of Observed Trips ^a	Percent of Year's Evidence ^b
Bering Sea hair crab	1992	3	0	0	0
	1993	14	0	0	0
	1994	12	0	0	0
	1995	22	0	0	0
	1996	21	3	14.3	14.3
	1997	16	4	25	16.7
	1998	12	2	16.7	4.9
	1999	8	0	0	0
	2000	3	0	0	0
	2001	No Fishery			
Grooved Tanner crab All areas ^d	1994	17	1	5.9	6.7
	1995	52	1	1.9	4.3
	1996	21	2	9.5	9.5
	1997	0	0	0	0
	1998	0	0	0	0
	1999	0	0	0	0
	2000	3	0	0	0
	2001	4	0	0	0
Miscellaneous Fisheries ^e	1992	8	0	0	0
	1993	15	0	0	0
	1994	0	0	0	0
	1995	5	0	0	0
	1996	2	0	0	0
	1997	5	0	0	0
	1998	0	0	0	0
	1999	0	0	0	0
	2000	1	0	0	0
	2001	15	0	0	0
Community Development Quota fisheries ^f	1998	35	13	37.1	37.1
	1999	42	1	2.4	10
	2000	23	2	8.6	1.5
	2001	17	0	0	0

-Continued-

Table 7-10. (page 4 of 4)

Fishery	Year	Observer Trips	Trips with Evidence	Percent of Observed Trips ^a	Percent of Year's Evidence ^b
Statewide scallops	2001	15	0	0	0
Summary	1991	277	42	15.2	N/A
	1992	225	42	18.7	
	1993	163	18	11	
	1994	118	15	12.7	
	1995	196	23	11.7	
	1996	190	21	11	
	1997	133	24	18	
	1998	145	41	28.3	
	1999	125	10	8	
	2000	131	7	5.3	
	2001	146	5	3.4	

^a Percentage of trips in which evidence was collected.

^b Percentage of total evidence collected, by fishery, for the fishing year (January 1 through December 31).

^c In 1996 the Adak and Dutch Harbor king crab Registration Areas were consolidated into the Aleutian Islands Area 'O' king crab Registration Area and opened on September 1st, the traditional opening time of the former Dutch Harbor area.

^d Grooved Tanner crab areas include the following: Bering Sea, Western Aleutian, Eastern Aleutian, Kodiak, Alaska Peninsula, and Southeastern Alaska.

^e Miscellaneous fisheries for all years can include: Bering Sea golden king crab, Bering Sea and Eastern or Western Aleutian octopus, surf clam, snail, St. Lawrence blue king crab, Norton Sound red king crab, Eastern Aleutian triangle Tanner crab, Western Aleutian Tanner crab, Western Aleutian hair crab, Southeast miscellaneous (urchins, shrimp, etc.), and Bering Sea snow crab CDQ experimental.

^f CDQ fisheries include Bering Sea snow crab, St. Matthew blue king crab, Pribilof red and blue king crab, and Bristol Bay red king crab

Table 7-11. Yearly summary by region of observed scallop vessels, number of observer trips, and observer-months at sea for Alaska weathervane scallop fisheries, 1993-2001.

	Yakutat ^a			Prince Willian Sound			Cook Inlet			Westward ^d		
	Vessel ^b	Trips	Months	Vessel ^b	Trips	Months	Vessel ^b	Trips	Months	Vessel ^b	Trips	Months
1993	8	8	3.4	7	7	2.1	0	0	0	30	57	30.7
1994	15	15	6.3	0	0	0	4	4	0.4	29	50	36.8
1995	8	9	7.8	2	2	0.9	0	0	0	2	4	2
1996	6	6	5.4	0	0	0	0	0	0	8	12	11.3
1997	4	4	5.6	1	1	0.4	0	0	0	12	19	15.2
1998	8	10	7.4	2	2	0.7	0	0	0	21	29	18.2
1999	3	4	5.9	2	2	0.4	0	0	0	14	21	14.4
2000	3	8	6.5	3	3	1.3	0	0	0	12	15	9.9
2001	2	4	4.1	1	1	0.9	0	0	0	7	10	9.1
Total	14 ^c	68	52.4	11 ^c	18	6.7	4 ^c	4	0.4	15 ^c	217	147.6

^aIncludes District 16.

^bNumber of vessel registrations.

^cVessels are unique.

^dIncludes Kodiak and Bering Sea areas.

Table 7-12. Statewide scallop observer activity, 1993-2001.

	1993	1994	1995	1996	1997	1998	1999	2000	2001
Observed vessels	10	11	8	5	6	8	8	7	4
Observed trips	72	67	15	18	24	41	27	26	15
Observed months	36.2	43.3	13.0	16.7	21.2	26.3	20.7	17.7	14.1

Table 7-13. Scallop observer activity by area for the calendar year 2001.

Area	Vessel(s)	Trip(s)	% Trips	Months	% Months
Yakutat	2	4	27	4.1	29.1
Prince William Sound	1	1	07	0.9	6.4
Kodiak	4	6	40	5.7	40.4
Bering Sea	3	4	27	3.4	24.1

Table 7-14. Crab observer training and participation since 1988.

Year	History of Year Class as of 12/31/01					Certified ^a at year's end	Percent Turnover
	Number of		Certification Status				
			Certified ^a	Expired ^b	Revoked ^c		
Classes	Trainees						
1988	3	81	0	72	9	80	1
1989	1	42	1	37	4	98	20
1990	3	26	0	24	2	119	2
1991	4	60	1	56	3	99	40
1992	2	38	1	37	0	103	29
1993	2	19	0	18	1	62	35
1994	1	16	0	15	1	83	30
1995	3	53	7	43	3	77	35
1996	3	35	5	30	0	75	35
1997	2	29	3	25	1	55	32
1998	2	22	4	18	0	44	39
1999	1	10	1	9	0	41	32
2000	2	14	9	5	0	36	33
2001	3	24	24	0	0	56	11
Totals	32	469	56	389	24	N/A	N/A

^a Represents all crab observers who hold a certificate or trainee permit.

^b Due to 12-month shellfish observer employment inactivity or trainee permit expiration after 180 days.

^c Certificate revoked for non-compliance with shellfish observer program standards.

Table 7-15. Scallop observer training and participation since 1991.

Year	Number of		History of Year Class as of 12/31/01			Certified ^a at year's end	Percent Turnover
	Classes	Trainees	Certified ^a	Expired ^b	Revoked ^c		
1993	3	19	0	18	1	22 ^d	8
1994	4	17	0	13	3	20 ^d	49
1995	0	0	0	0	0	17	15
1996	2	10	0	10	0	6	78
1997	2	10	0	10	0	8	50
1998	1	9	0	9	0	9	47
1999	1	8	0	8	0	10	41
2000	1	5	3	2	0	6	60
2001	1	4	4	0	0	8	20
Totals	15	82	8	70	4	N/A	N/A

^a Represents all scallop observers who hold a certificate or trainee permit.

^b Due to 12-month shellfish observer employment inactivity or trainee permit expiration after 180 days.

^c Certificate revoked for non-compliance with shellfish observer program standards.

^d Includes people deployed without attending a class.

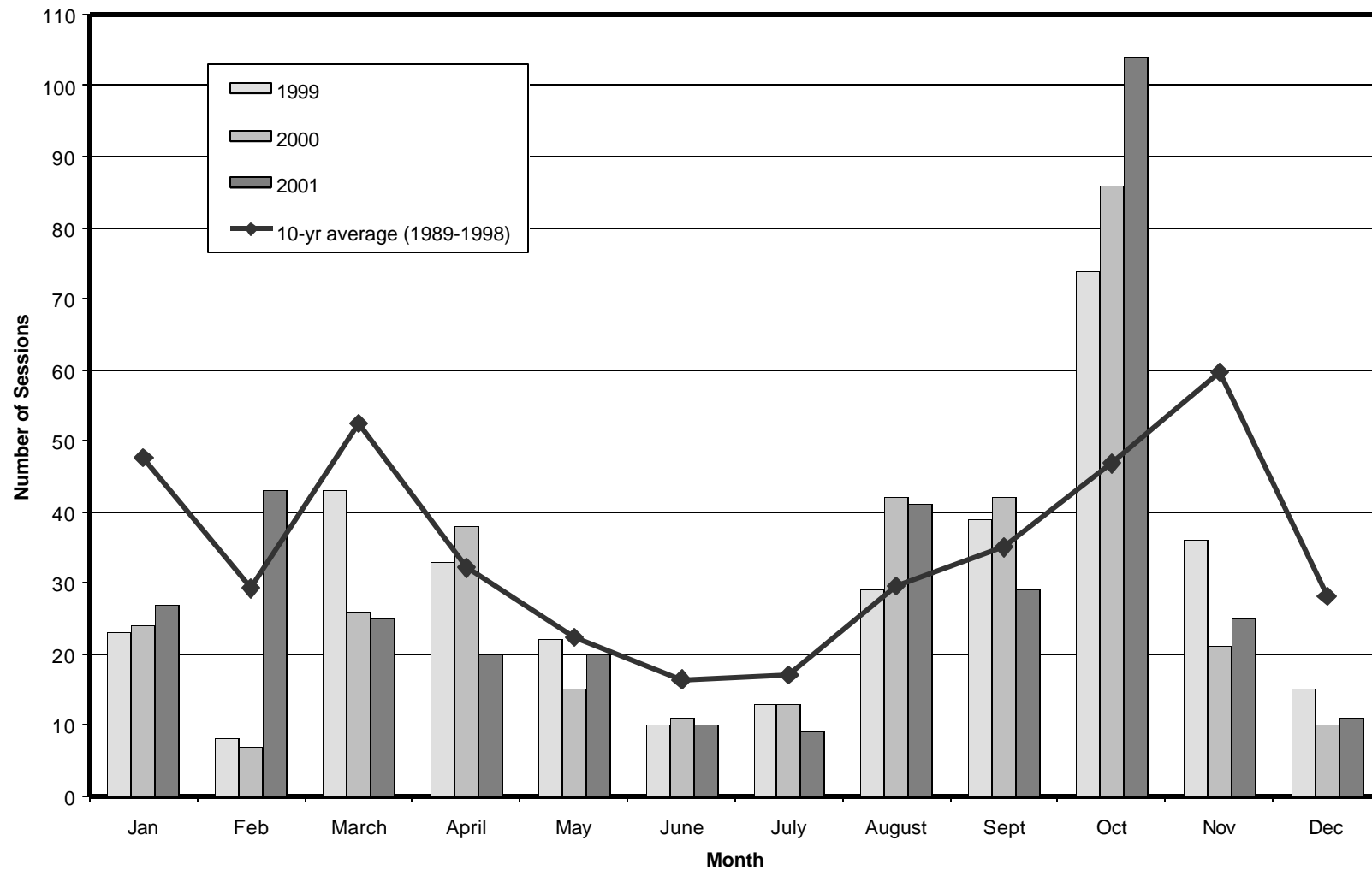


Figure 7-1. Comparison of total number of crab and scallop observer sessions (briefings, midtrips and debriefings) for the years 1999, 2000, 2001 and the average for the previous ten years, from 1989 - 1998.

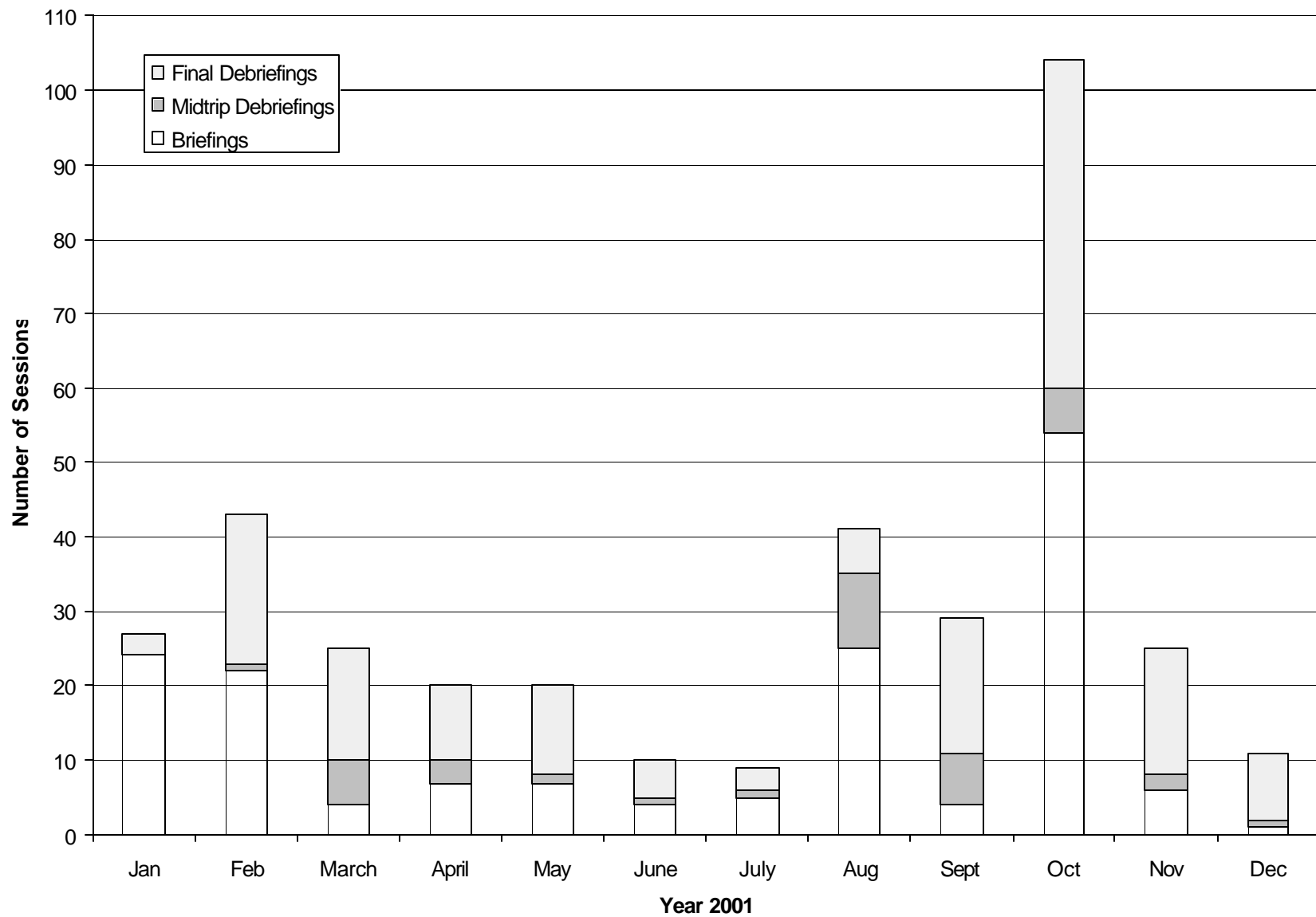


Figure 7-2. Total number of crab and scallop observer sessions (briefings, midtrip debriefings and final debriefings) for 2001.

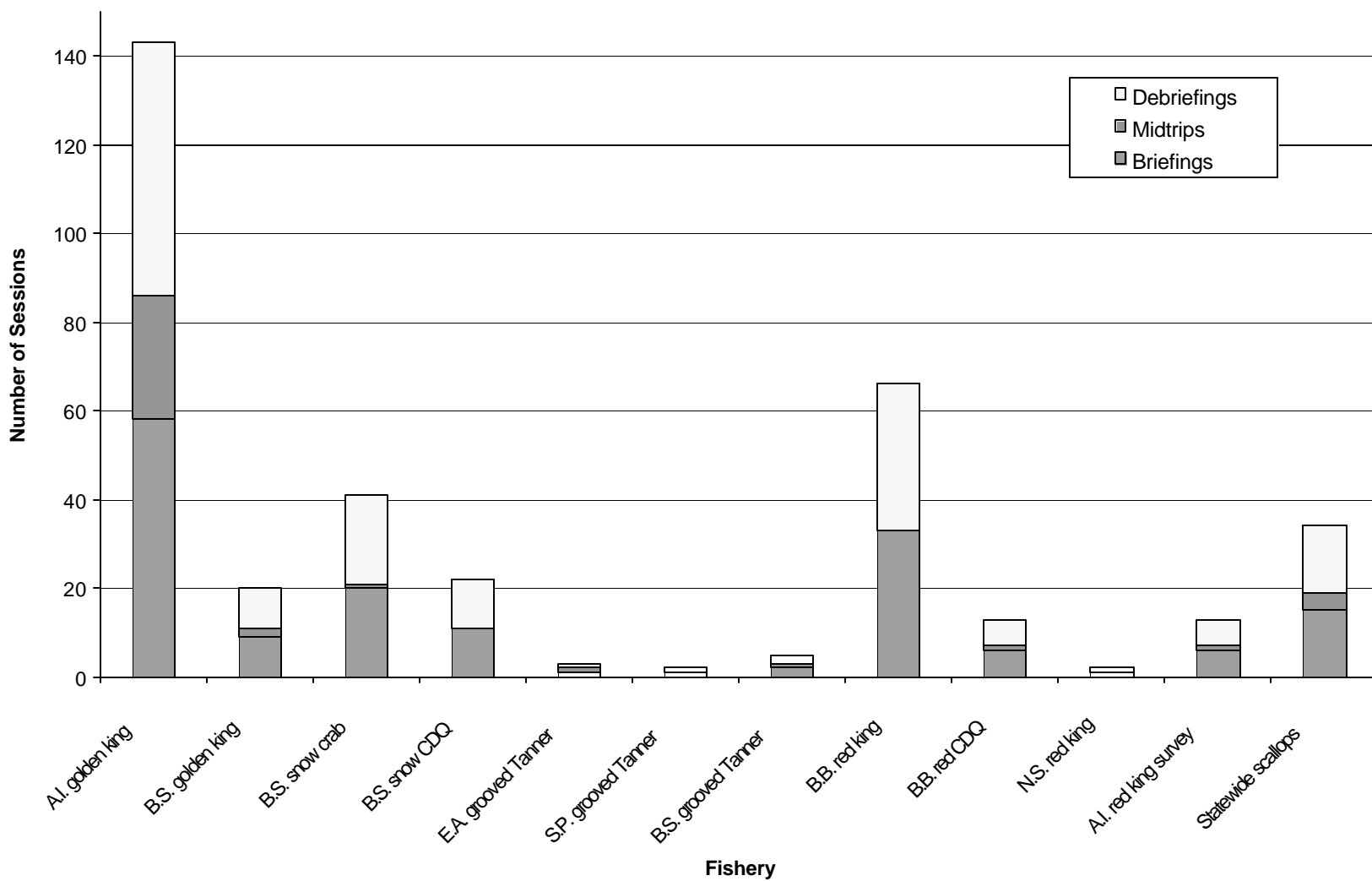


Figure 7-3. Number of observer sessions (briefings, midtrip debriefings and final debriefings) per fishery for 2001.

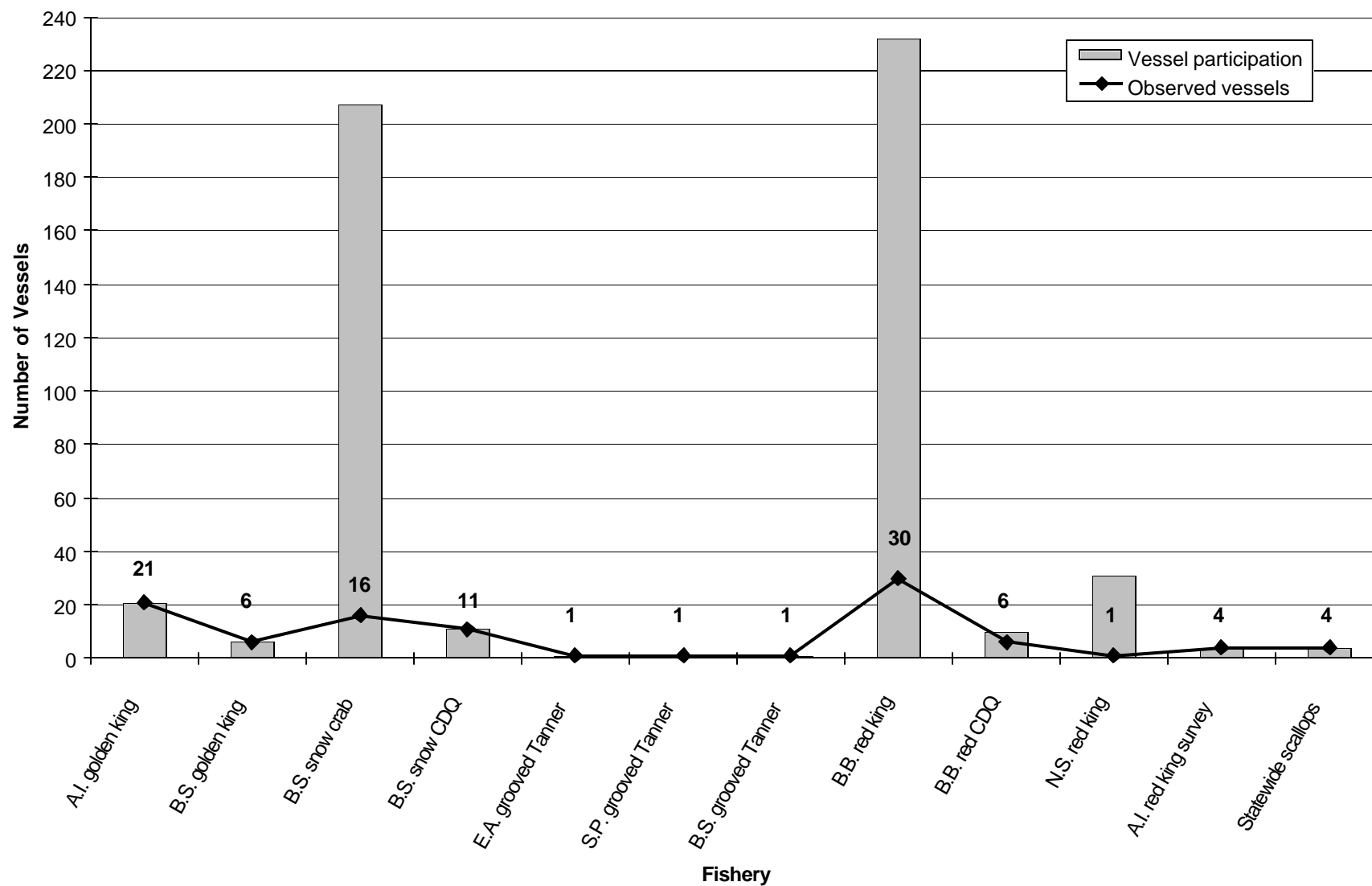


Figure 7-4. Level of observer coverage per fishery in calendar year 2001.

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